1917 BIOLOGICAL DIVISION

THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

No. XXVI. OF VOL. II., 1916.
No. 4869. Vol. CXCI. LONDON, SATURDAY, DECEMBER 23, 1916. Price 6d.

BONESETTING and the TREATMENT of PAINFUL JOINTS.

By FRANK ROMER, M.R.C.S., L.R.C.P., and L. ELIOT CREASY, M.R.C.S., L.R.C.P.

Crown 8vo, 1s. net.

"Messrs. Romer & Creasy strip this branch of practice of the cloud of mystery and miracle which has been thrown around it by interested people and well-meaning, but ignorant supporters. They effectually disprove the foolish charge that the medical profession has wilfully ignored the subject, and they have dealt with it in an unprejudiced spirit. Moreover, they bear witness to the fact that the profession keeps an open mind as to everything connected with the treatment of disease and the relief of pain and physical disability, and is willing to learn from any source anything that may seem likely to be useful for these purposes."—BRITISH MEDICAL JOURNAL.

James Nisbet & Co., Limited, 22, Berners-street, W.

NOW READY. 73rd Annual Issue. 2119 Pages.
16s. net (postage 8d.).

THE MEDICAL DIRECTORY, 1917.

LONDON, PROVINCES, WALES, SCOTLAND, IRELAND, ABROAD, ARMY AND NAVY, DENTAL SURGEONS.

London: J. & A. Churchill, 7, Gt. Marlborough-street, W.

BY ERNEST CLARKE, M.D., F.R.C.S., Consulting Surgeon to Central London Opnthalmic Hospital, &c.
ERRORS OF ACCOMMODATION AND REFRACTION OF THE EYE.
Third Edition. With 86 Illustrations and Coloured Plates. Price 5s. net.
"..... This book is one of the best."—PRACTITIONER.
London: Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden, W.C.

OPERATIVE TREATMENT OF FRACTURES.

By Sir ARBUTHNOT LANE, Bart., M.S.

SECOND EDITION.

With 226 Illustrations. 10s.

The Medical Publishing Company, Ltd., 23, Bartholomew Close, E.C.

By C. O. HAWTHORNE, M.D.

STUDIES IN CLINICAL MEDICINE.

"A valuable miscellany of clinical studies."—EDIN. MEDICAL JOURNAL.
"Covers the ground of clinical medicine in an able manner."
—CANADA LANCET.
"Should be in the possession of every general practitioner."—PRESCRIBER.
Price 6s. net. Bale, Sons and Danielsson, Gt. Titchfield street.

Now Ready. Crown octavo. 56 pp. Illus. Price 1s. net; by post 1s. 2d.
NOTES ON MILITARY ORTHOPÆDICS.
By PAUL BERNARD ROTH, F.R.C.S. "Should be in the hands of every surgeon on active service."—MEDICAL WORLD.
Henry Kimpton, 263, High Holborn, London, W.C.

STAMMERERS
who have been refused for service in the ranks qualified FREE by W. J. KETLEY, "Tarrangower," Brondesbury, N.W.
(30 years colleague of late B. BEASLEY, Brampton Park, Huntingdon.)
Others interested in the subject should write for his book, which will be sent post free.

Now Ready. Pp. xi. + 269. With 3 Charts. 5s. net.
ON ALCOHOLISM: Its Clinical Aspects and Treatment.
By FRANCIS HARE, M.D., Medical Superintendent of the NORWOOD SANATORIUM, Beckenham.
"Marked by candour, common sense, and moderation .. ... likely to become the standard text-book."—BRITISH MEDICAL JOURNAL.
London: J. & A. Churchill, 7, Great Marlborough-street.

Demy 8vo. 3s. net; post free, 3s. 4d.
A NEW TREATMENT FOR GONORRHŒA.
By CHARLES RUSS, M.B., M.R.C.S., L.R.C.P., Physician-in-Charge, Electro-Therapeutic Department, Male Lock Hospital, London.
[*Now Ready.*
"This form of treatment merits further attention, as it is both scientific and ingenious. Instead of attacking the gonococci in their strongholds by means of bactericidal agents, which too often do not reach them, they are lured, so to speak, from their entrenchments by electrolytic action."—BRITISH MEDICAL JOURNAL.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.

H. K. LEWIS & CO. LTD.,
MEDICAL PUBLISHERS & BOOKSELLERS.
CHRISTMAS HOLIDAYS, 1916.
FROM SATURDAY, DEC. 23RD, TO TUESDAY, DEC. 26TH INCLUSIVE.
136 Gower-street, and 24 Gower place, London W.C.

SAUNDERS'

NEWEST BOOKS

See Saunders' Advertisement on Page 3.

J. W. THOMSON WALKER, M.B., C.M.Edin., F.R.C.S.Eng.

SURGICAL DISEASES AND INJURIES OF THE GENITO-URINARY ORGANS.

880 pages, 24 Colour and 21 Black-and-White Plates and 279 Illustrations in the Text. Price 25s. net.

"Will hold its place for many years as the best English text-book of the subject."—BRITISH JOURNAL OF SURGERY.

Cassell & Co., La Belle Sauvage, London, E.C.

Now Ready. Price 1s.
APPLICATION of TRUSSES to HERNIÆ.
Clinical Lecture delivered at King's College Hospital.
By the late JOHN WOOD, F.R.S.,
Senior Surgeon to King's College Hospital.
Reprinted from "Medical Examiner." With Illustrations.
London: Matthews Brothers, 10, New Oxford-street, W.C.

STAMMERING, LISPING, and CLEFT-PALATE SPEECH.

By MRS. BEHNKE. (N.B.—Mrs. Behnke is English.)

Price 1s. net (postage 2d.), of Mrs. Behnke, 18, Earl's Court-square, S.W., who receives Stammerers for Treatment.

REFERENCES to Medical Practitioners whose stammer Mrs. Behnke has cured, and to others.

FREYER'S ENLARGEMENT of the PROSTATE. With a Description of the Author's Operation of Total Enucleation of the Organ. A Work based on 800 Cases of the Operation. THIRD EDITION. With 54 Illustrations. Price 6s. net.
SURGICAL DISEASES OF THE URINARY ORGANS. With 141 Illustrations. Price 12s. 6d. net.
Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden, London.

BY FRANK KIDD, F.R.C.S., Assistant Surgeon at the London Hospital and Surgeon-in-Charge of Genito-Urinary Department, London Hospital.

In the Press, to be published shortly.

COMMON DISEASES OF THE MALE URETHRA.

Being a Course of Lectures delivered at the London Hospital, designed to assist those who may be starting Genito-Urinary Clinics.

BY THE SAME AUTHOR. Price 7s. 6d. net.
URINARY SURGERY. A REVIEW.
"This book can be thoroughly recommended to those who are desirous of being acquainted with the modern position of Urinary Surgery."—GLASGOW MEDICAL JOURNAL.
London: Longmans, Green & Co., 39, Paternoster-row, E.C.

 THE LANCET is registered as a Newspaper. All rights reserved.

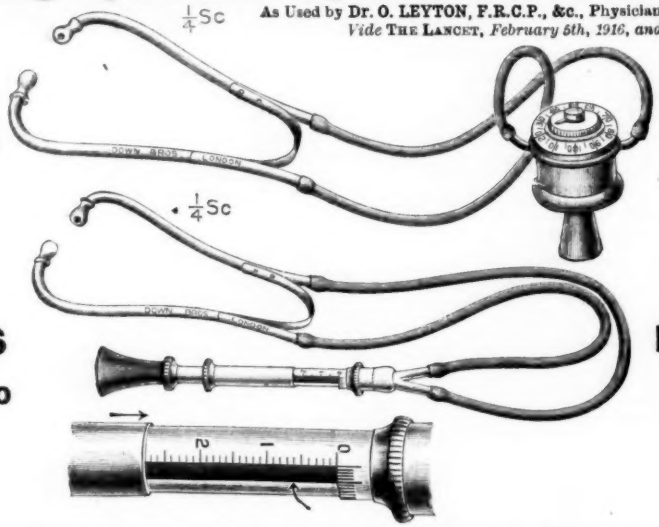
DIFFERENTIAL STETHOSCOPES

For Diagnosing Myocardial Degeneration, Soldier's Heart, &c.

As Used by Dr. O. LEYTON, F.R.C.P., &c., Physician to the London Hospital.
Vide THE LANCET, *February 5th, 1916, and July 1st, 1916.*

BOCK'S
Price **£2 17 6**

DIFFERENTIAL STETHOSCOPE



OERTEL'S
Price **£1 15 0**

DIFFERENTIAL STETHOSCOPE

GRANDS PRIX.
Paris, 1900. Brussels, 1910. Buenos Ayres, 1910.

And GOLD MEDAL, Allahabad, 1910.

MANUFACTURED BY
DOWN BROS., Ltd., SURGICAL INSTRUMENT MANUFACTURERS :: ::
21 & 23, St. Thomas's St., London, S.E.
(Opposite GUY'S HOSPITAL.)
Factory: KING'S HEAD YARD, LONDON, S.E.
Telegraphic Address: "DOWN, LONDON." Telephone: HOP 4400 (4 lines).

"LESLIES' ZINCOPLAST"

A MUCH IMPROVED MAKE OF ZINC OXIDE PLASTER; STRONGLY SELF-ADHESIVE; NON-IRRITATING; DOES NOT DRY UP.

May be obtained on White or Pink Tinted Cloth, 5 yd. or 10 yd. spools, in all the usual widths.

Medical Officers and Pharmacists are invited to write for Trial Sample.

LESLIES' Original Brown Holland Surgical Strapping (DOES NOT SLIP)

In General Hospital Use since 1875. Has a World-wide Reputation.

LESLIES, Ltd., 18, Eldon Street, London, E.C.

SUPPORT BRITISH INDUSTRY AND CAPITAL BY USING

CARBURINE MOTOR SPIRIT

OBTAINABLE EVERYWHERE IN SEALED 2 GLN. CANS.

By Appointment to H.M. THE KING.

IF YOU CANNOT GET SAME FROM YOUR LOCAL GARAGE PLEASE WRITE TO—

G. L. I. CO., LTD., SALISBURY HOUSE, LONDON WALL, LONDON, E.C.

THE LANCET.

No. 4869. LONDON, SATURDAY, DECEMBER 23, 1916. Vol. CXCI.

CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

OBSERVATIONS on the Antiseptic Treatment of Wounds. By I. FELDMAN, M.R.C.S., L.R.C.P. Lond., Medical Officer in Charge of the Military Wards, Poplar Hospital, &c.; and A. J. WALTON, M.S. Lond., F.R.C.S. Eng., Captain, R.A.M.C. (T.), &c.. 1043

ORIGINAL ARTICLES.

The Cerebral Associations of Raynaud's Disease. By HUBERT J. NORMAN, M.B. Edin., D.P.H. 1049

A Note on the Treatment of Lamblia Infections. By CLIFFORD DOBELL, M.A., and GEORGE C. LOW, M.A. St. And., M.D. Edin. 1053

The Fulminating Type of Cerebro-spinal Fever: Pathology and Cause of Death. By P. W. MACLAGAN, M.B., Ch.B. Edin.; and W. H. COOKE, M.D. Liverp., M.R.C.P. Edin., D.P.H. 1054

The Importance of Getting a Pregnant Woman under Medical Supervision, and Affording Her the Necessary Treatment. By AMAND ROUTH, M.D., F.R.C.P. Lond. 1055

Two Fatal Cases of Metastatic Gas Gangrene. By KENNETH TAYLOR, M.A., M.D. 1057

MEDICAL SOCIETIES.

ROYAL SOCIETY OF MEDICINE:
SECTION OF SURGERY:—Anaerobic Wound Infection 1058
SECTION FOR THE STUDY OF DISEASE IN CHILDREN:—Exhibition of Cases and Specimens.—Speech Records of Cerebral Diplegia 1058

REVIEWS AND NOTICES OF BOOKS.

Surgical Contributions from 1881–1916. By J. Rutherford Morison, M.B. Ed., F.R.C.S. Edin., F.R.C.S. Eng. 1059

Diseases of the Throat, Nose, and Ear, for Practitioners and Students. By W. G. Porter, M.B., B.Sc., F.R.C.S. Edin. Second edition 1059

The Sexual Disabilities of Man, their Treatment and Prevention. By Arthur Cooper, M.R.C.S., L.R.C.P. Lond., Third edition 1059

The Treatment of Diseases of the Skin. By W. Knowsley Sibley, M.A., M.D. Camb. Second edition 1059

Links in a Chain of Research on Syphilis (Oxidation and Reduction). By J. B. R. McDonagh, F.R.C.S. 1059

Diseases of the Eye: A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. de Schweinitz, M.D., LL.D. Eighth edition 1059

The Hope of the Future: The Management of Children in Health and Disease. By Dr. Mary Scharlieb 1059

The Rhymes of a Red Cross Man. By Robert W. Service 1059

Journal of Anatomy 1060

Archives de Médecine Navale 1060

NEW INVENTIONS.

An Aural Tube in Open Ether Anæsthesia (Dr. Mona Dew Roberts).—(*Illustrated*) 1060

Appendicectomy Clamp (Lieut. J. D. Speid Sinclair, R.A.M.C.).—(*Illustrated* 1060

LEADING ARTICLES.

THE UNIVERSITIES AND WAR WORK 1061

BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND 1061

ANNOTATIONS.

Food Regulation and a Food Ministry 1062

The Pathology of Gas Gangrene 1063

The Bacteriology of Whooping-Cough 1063

Water-supply and Drainage of Sydney 1064

The Chemistry of the Vitamines 1064

Epidemic Infective Jaundice at the Italian Front 1065

THE LANCET, VOL. II., 1916: Index Notice 1066

SPECIAL ARTICLES.

Report of the Local Government Board for 1915–16 1066

Industrial Research at the Universities 1067

The Control of Venereal Diseases 1068

Medicine and the Law 1069

The Belgian Doctors' and Pharmacists' Relief Fund.... 1069

The Services 1070

VITAL STATISTICS:
Health of English Towns..... 1070
Health of Irish Towns 1070

CORRESPONDENCE.

The Prohibition of Alcoholic Beverages (Fleet Surgeon W. E. Home, R.N.) 1072

The Use of X Rays during Operation for Foreign Bodies (Dr. Stephen M. Lawrence) 1072

The Mobilisation of the Medical Profession (Dr. Gordon Ward, Mr. J. C. Barker)..... 1073

Tickling Cough (Mr. A. Kinsey-Morgan)..... 1073

Pathology of Cancer (Dr. J. A. Murray) 1073

Ethical Standards and Medical Practice under Insurance Act (Mr. A. P. Walters) 1080

THE WAR.

The Casualty List..... 1074

The Central Medical War Committee..... 1074

The Canadian Army Medical Service 1074

Physical Treatment for Disabled Soldiers 1074

Deaths among the Sons of Medical Men 1075

Malaria and its Treatment: Experience of an Australian Expedition 1075

Gifts to the Red Cross Society 1076

Queen Charlotte's Lying-in Hospital and the War 1076

Convalescent Home for Wounded Officers in Simla... 1076

War Hospitals 1076

Baths for Soldiers 1076

War Hospital Magazines..... 1076

OBITUARY OF THE WAR:
Ian Alexander Murray Clarke, M.B., Ch.B. Edin., Captain, R.A.M.C.—(*With Portrait*) 1075
Neil Murphy Gavin, F.R.C.S. Edin., Lieut., R.A.M.C.—(*With Portrait*) 1075

OBITUARY.

Sir Frederic S. Eve, F.R.C.S. Eng., Temporary Lieut.-Col., R.A.M.C.; Consulting Surgeon, Eastern Command, and to the London Hospital and Princess Henry of Battenberg's Hospital.—(*With Portrait*) 1073

MEDICAL NEWS.

Livingstone College 1076
Revision of Panel Doctors' Lists 1076
Medical Entomology of Salonika 1076
Literary Intelligence..... 1076
University of Oxford: Pass-list 1076
University of London: Pass-list 1076
University of Liverpool: Pass-list 1076
University of Manchester: Pass-list 1077
Royal College of Surgeons of England: Pass-list.—Dental licences conferred 1077
Royal College of Physicians of London 1077
Central Midwives Board..... 1077
Royal Institution..... 1077
The Child-Study Association .. 1077
King Edward VII.'s Hospital, Cardiff 1077
Royal Albert Hospital, Devonport 1078

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics..... 1078
House of Commons 1078

Appointments.—Vacancies..... 1078
Births, Marriages, and Deaths 1079
Notes, Short Comments, and Answers to Correspondents.. 1079
Medical Diary..... 1081
Editorial Notices..... 1081
Manager's Notices..... 1081
Meteorological Readings..... 1081
Books, &c., received..... 1081
Acknowledgment of Communications received 1081

FOR INDEX TO ADVERTISEMENTS SEE PAGE 2.

JOHN BALE, SONS & DANIELSSON, LTD.,

PRINTERS, PUBLISHERS, & PROCESS BLOCK MAKERS.

A CLINICAL SYSTEM OF TUBERCULOSIS. By Drs. BANDELIER and ROEPKE. Describing all forms of the Disease. Translated from the Second Edition by G. B. HUNT, M.D. Royal 8vo. Pp. 526+xii. 21s. net; postage 7d.

TUBERCULIN IN DIAGNOSIS AND TREATMENT. By the same Authors. Translated from the Seventh Edition by W. B. CHRISTOPHERSON. Royal 8vo. With Coloured Illustrations and Charts. Pp. 307+xvi. 15s. net; postage 7d.

TUBERCULOSIS IN CHILDREN. By Professor CORNET. Translated from the Second Edition by J. E. BULLOCK, M.D. Royal 8vo. Pp. 527+xii. 15s. net; postage 6d.

ACUTE GENERAL MILIARY TUBERCULOSIS. By the same Author. Translated by F. S. TINKER, B.A., M.B. Demy 8vo. Pp. 113+viii. 6s. net; postage 3d

83, 85, 87, 89 & 91, GREAT TITCHFIELD ST., OXFORD ST., LONDON, W.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

PAGE

BAILLIERE, TINDALL & COX:—
Bigg—Indigestion ... 4
Clarke, E.—Errors of Accommodation and Refraction of the Eye ... Cover 1
Freyer—Enlargement of the Prostate ... Cover 1
Freyer—Surgical Diseases of the Urinary Organs ... Cover 1

BALE, SONS & DANIELSSON:—
Bandelier & Roepke—A Clinical System of Tuberculosis ... 1
Bandelier & Roepke—Tuberculin in Diagnosis and Treatment ... 1
Cornet—Tuberculosis in Children 1
" Acute General Miliary Tuberculosis ... 1
Hawthorne—Studies in Clinical Medicine ... Cover 1

PAGE

CASSELL & CO.:—
Walker—Surgical Diseases and Injuries of the Genito Urinary Organs ... Cover 1

CHURCHILL, J. & A.:—
Hare—Alcoholism: Its Clinical Aspects and Treatment.. Cover 1
The Medical Directory, 1917 Cover 1
Thorne, Bezly—Schott Methods of Treatment of Chronic Diseases of the Heart ... 4

FROWDE AND HODDER & STOUGHTON:—
Waring—Surgical Diseases of the Gall Bladder, Bile Ducts, and Liver ... 4
Waring—Manual of Operative Surgery ... 4

PAGE

KIMPTON:—
Roth—Notes on Military Orthopædics ... Cover 1

LEWIS & CO:—
Russ—A New Treatment for Gonorrhœa ... Cover 1

LONGMANS, GREEN & CO.:—
Kidd—Common Diseases of the Male Urethra. A Course of Lectures delivered at the London Hospital ... Cover 1
Kidd—Urinary Surgery ... " 1

MEDICAL PUBLISHING CO.:—
Lane, Sir A.—Operative Treatment of Fractures ... Cover 1

NISBET & CO.:—
Romer and Creasy—Bonesetting and the Treatment of Painful Joints ... Cover 1

PAGE

SAUNDERS COMPANY:—
Celle—The Kinetic Drive ... 3
Cullen—Diseases of the Umbilicus 3
Deaderick & Thompson—Endemic Diseases of South ... 3
Graves—Gynecology ... 3
Mayo, &c.—Mayo Clinic Papers of 1915 ... 3
Saunders' Newest Books ... Cover 1

WRIGHT & SONS (BRISTOL):—
Index of Treatment ... 4

MEDICAL LIBRARIES, &c.:—
Baker—Books ... 4
Behnke—Stammering, Lisping, & Cleft-Palate Speech ... Cover 1
H. K. Lewis & Co. ... Cover 1
Ketley Stammering ... Cover 1
Matthews—Wood: Application of Trusses to Hernia ... Cover 1

OFFICIAL AND GENERAL ANNOUNCEMENTS

ASSISTANCIES, MEDICAL ... 50

ASYLUMS, HOMES, &c.:—
Ashwood House, Kingswinford ... 43
Barnwood House Hospital ... 44
Bishopstone House, Bedford ... 48
Brunton House, Lancaster ... 44
Camberwell House, Peckham-road 48
Cheadle Royal ... 44
Clarence Lodge, Clapham Park ... 48
Colthurst House School, Alderley Edge ... 48
Coppice, The, Nottingham ... 44
Dalrymple House, Rickmansworth 46
David Lewis Colony, Alderley Edge 48
Duff House, Banff ... 47
General Manager, Craven street... 48
Ghyllwoods Sanatorium ... 46
Grove House, Church Stretton ... 44
Grove, The, Catton, Norwich ... 44
Haslemere Nursing Home ... 48
Haydock Lodge, Newton-le-Willows ... 45
Homes for Inebriate Women ... 48
Littleton Hall, Brentwood ... 48
London Fever Hospital ... 44
Malling Place, Kent ... 44
Melbourne House, Leicester ... 48
Mendip Hills Sanatorium ... 43
Moat House, Tamworth ... 44
Newmains Retreat, Lanarkshire.. 48
New Saughton Hall, Polton, Midlothian ... 45
Nordrach-on-Dee, Banchory ... 47
Northumberland House, Finsbury Park ... 45
Northwoods House, Winterbourne 45

ASYLUMS—(Continued).
Otto House, West Kensington ... 43
Peckham House ... 48
Pendyffryn Hall Sanatorium, Nordrach-in-Wales ... 48
Plympton House, Plympton ... 44
Portsmouth Corporation Mental Hospital ... 48
Royal Earlswood Institution for Mental Defectives ... 45
St. Andrew's Hospital, Dollis Hill 48
St. Andrew's Hospital, Northampton ... 44
St. George's Retreat, Burgess Hill 45
St. Luke's Hospital for Mental Diseases ... 47
Springfield House Private Asylum, Bedford ... 43
Stretton House, Church Stretton. 44
The Grange, near Rotherham ... 43
Vale of Clwyd Sanatorium ... 48
Warneford Asylum, Oxford ... 47
Wye House, Buxton ... 44

FINANCIAL, &c.:—
Equitable Reversionary Interest Society ... 49

HEALTH RESORTS, BATHS, &c.:—
Alexandra Therapeutic Institute. 47
Caterham Sanitarium ... 47
Droitwich Brine Baths ... 47
Smedley's, Matlock ... 47

HOSPITAL, INFIRMARY, SANATORIUM, &c., VACANCIES ... 48 50

HOUSE & ESTATE AGENTS:—
Redford & Co., Wigmore-street .. 51
Elliott, Son & Boyton, Vere-st.... 51
Ley Clark, Wimpole-street ... 51
CONSULTING-ROOMS:—
No. 214, L.O., Strand ... 51

LIFE & FIRE ASSURANCES, &c.:—
General Life Assurance Co. ... 48
National Provident Institution .. 49
Prudential ... 48

MASSAGE:—
Sharman ... 43

MEDICAL ACCOUNTANTS, &c.:—
Turner ... 51

MEDICAL AGENTS:—
Fieldhall, Limited ... 51
Manchester Clerical, &c., Assoc.. 51
Medical Agency ... 51
Needes, J. C. ... 51
Peacock & Hadley ... 51
Turner ... 51

MEDICAL SCHOOLS:—
(LONDON.)
London School of Clinical Med. .. 41
Middlesex Hosp. Medical School. 41
West London Post-Graduate Coll. 41

NURSES' ASSOCIATIONS:—
Co-operation of Temperance Male and Female Nurses ... 42
Female Nurses Association ... 42
General Nursing Association ... 45
Hospital for Sick Children ... 42

NURSES' ASSOC. (Continued).
London Nurses' Association ... 43
London Temperance Nurses Co-operation ... 42
Male Nurses Temperance Co-operation ... 42
Mental Nurses Association ... 45
Mental Nurses' Co-operation ... 42
Nurses' Association ... 42
Nurses' Co-operation ... 45
St. John's House ... 42
St. Luke's Hospital ... 42
Temperance Association of Male Nurses, Ltd. ... 42
The Retreat, York ... 43

OFFICIAL NOTICES:—
City of London Lying-in Hospital. 41
Eadon-Clarke—Change of Surname ... 41
Institute of Massage and Remedial Gymnastics ... 41
London School of Tropical Medicine ... 41
Queen Charlotte's Lying-in Hospital ... 41
Royal College of Physicians of London ... 41
University of Cambridge ... 41

PARTNERSHIPS & PRACTICES. 50

RAILWAY & STEAMSHIP CO.'S.:—
New Zealand Shipping Co. ... 41

TUTORS & LECTURERS:—
Medical Correspondence College. 41
Weymouth ... 41

TRADE AND MISCELLANEOUS ADVERTISEMENTS

AMBULANCES:—
St. John Ambulance — Invalid Carriages ... 39

BOTTLE MERCHANTS:—
Isaacs ... 39

CARRIAGES, MOTORS, &c.:—
Armstrong—
Chauffeurs', Coachmen's, Footmen's Liveries ... 51

CHEMISTS & DRUGGISTS:—
Allen & Hanburys—
Allenburys Throat Pastilles 18
Byno Hypophosphites ... 21
Angio-French Drug Co.—
Galyl ... 28
Hectargyre ... 28
Antiphlogistine ... Cover iv
Antikamnia Chemical Co.—
Antikamnia Tablets ... 30
Battley & Watts—
Liquor Opii Sedativus ... 9
Boots Pure Drug Co.—
Aspirin, &c. ... 31
British Drug Houses Ltd.—
Intramine ... 32
British Oxygen Co.—
Oxygen ... 38
British Purchasers of Sanatogen—
Sanatogen ... 10
Bullock & Co.—
Pepsina Porci ... 38
Acid Glycerine of Pepsine ... 38
Burroughs Wellcome & Co.—
Nirin, Hexamine ... 22
Emule Brand Rectal Suppositories ... 24
Aspirin ... 25
Sodium Salicylate ... 25
Christy & Co.—
Glyco-Thymoline ... 29
Glyco-Heroin ... 36
Crookes' Laboratories—
Collosol Iodine ... 30
" Argentum ... 30
Erasmic Co.—Kinsol Medicated Toilet Soap ... 35
Etablissements Poulenc Freres—
Stovaine ... 11
Gale & Co.—Elixir Cresolis c. Heroin Co., &c. ... 37

CHEMISTS—(Continued).
Heppells—
Urodonal ... 15
Hewlett & Son—
Mist. Damianæ Co. ... 13
Lambert Pharmacal Co.—
Listerine ... 32
Maltine Manufacturing Co.—
Malto-Yerbine ... 23
May & Baker—
Ba-topeptine ... 13
Newbery & Sons—
Pulvis Jacobi Ver. ... 38
New York Pharmaceutical Co.—
Hayden's Viburnum Compound 11
Parke, Davis & Co.—
Phylacogens ... 27
Raimes & Co.—Singer's Nutrient Suppositories ... 39
Saccharin Corporation, Ltd.—
Dial, Coagulen, Yohimbine 16
Smith & Co.—
Hall's Wine ... 38
S. P. Charges Co.—
Sulphaqua ... 36
" Soap ... 36
Wander, Ltd.—
"Wander" Malt Extract with Paraffin ... 12
Wilcox, Jozeau & Co.—
Rodine ... 37

DISINFECTANTS:—
Allen & Hanburys—
Dioxogen ... 20
Boots Pure Drug Co.—
Chloramine-T ... 31
Condy's Fluid ... 39

FOODS —
Allen & Hanburys—
Allenburys Diet ... 19
Benger's Food ... 28
Blatchley's Diabetic Preparations 38
Bovinine Co.—Bovinine ... 9
Brand & Co.—
Essence of Chicken ... 35
British Milk Products Co.—
Sanaphos ... 17
Cafolin Co.—Cafolin ... 34
Callard & Co.—Diabetic Foods .. 34
Carnrick & Co.—
Liquid Peptonoids ... 23

FOODS—(Continued).
Fry's Malted Cocoa ... Cover iii
Horlick's Malted Milk Co.—
Malted Milk Tablets ... 35
Manbu Food Co.—
Manbu Diabetic Foods ... 34
Pan Yan Pickle ... 34
Southall Bros. & Barclay—
Vitafer ... 14
" Chocolate ... 14
Valentine's Meat-Juice .... Cover iii

FURNITURE, &c.:—
Carter—
Furniture for Invalids and Hospital Supplies ... 8

HOSIERS, &c.:—
Wolsey Underwear Co.—
Wolsey Underwear ... 8

MED. & SURG. APPLIANCES:—
Bailey & Son—
Invalid Carriages and Chairs for Wounded Soldiers ... 33
Davis—Catgut Sutures ... 5
Down Bros.—Differential Stethoscopes ... Cover ii
Hogg & Son—
Steam Vaporisers ... 38
Leslies, Ltd.—
Leslies' Zincoplast ... Cover ii
Original Brown Holland Surgical Strapping ... Cover ii
Medical Supply Association—
Grevillite Therapeutic Incandescent Lamp ... 35
Millikin & Lawley—
Osteology, &c. ... Cover iii
Precious Metals Tempering Co.—
Tempered Gold Hypodermic Needle ... 5
Robinson & Sons—
Gamgee Tissue ... 6
Salmon Ody, Ltd.—
Trusses, &c. ... 6
Schærer—Hawley's Patented New Orthopædic Table, &c. ... 5
Timpson & Co.—
Thermometers ... 38
Zeal—Repello Clinical Thermometer ... 39

MINERAL WATERS, &c.:—
Cheltenham Natural Aperient Water ... 37
Vichy-Célestins ... 32

MOTOR SPIRIT:—
G. I. I. Co.—Carburine Motor Spirit ... Cover ii

OPTICIANS:
Bausch & Lomb Optical Co.—
Microscope ... 5
Watson & Sons—
Microscopes ... 39
Hæmocytometers ... 39

SANITARY APPLIANCES, &c.:—
Aymard Patent Milk Steriliser .. 6
Berkefeld Filter ... 39

TAILORS, BOOTMAKERS, &c.:—
Burberrys—
The Burberry ... 7
Harry Hall—
Service Dress R.A.M.C. and Navy ... 51

TOBACCO, CIGARS, &c.:—
Ardath Tobacco Co., Ltd.—
State Express Cigarettes ... 7
Player & Sons—
Perfectos Cigarettes ... 37

TYPEWRITING, &c.:—
Yost Typewriter Co.—
Yost ... 6

VACCINE LYMPH:—
Chaumier's Calf Lymph ... 6
Jenner Institute for Calf Lymph.. 6

WINES, BEER, SPIRITS, &c.:—
Tuckey & Co.—
Pure Malt Whisky ... 34
Liqueur Scotch Whisky ... 34

MISCELLANEOUS:—
Grieve—Instruction in Cultivation, Marketing, &c. ... 51
Hope Pearse—
Gwathmey Portable Apparatus. 39

Observations ON THE ANTISEPTIC TREATMENT OF WOUNDS.

By I. FELDMAN, M.R.C.S., L.R.C.P. LOND.,
MEDICAL OFFICER IN CHARGE OF THE MILITARY WARDS, POPLAR HOSPITAL; SENIOR DEMONSTRATOR IN PHYSIOLOGY, LONDON HOSPITAL MEDICAL COLLEGE;
AND
A. J. WALTON, M.S. LOND., F.R.C.S. ENG.,
CAPTAIN, R.A.M.C. (T.); ASSISTANT SURGEON, LONDON HOSPITAL; SURGEON, SECOND LONDON GENERAL HOSPITAL.

IN approaching any surgical problem from the point of view of treatment there are, roughly, two methods of attack. There is, firstly, the experimental method whereby the pathological changes are reproduced, as accurately as possible, under artificial conditions. These changes are studied and the methods of controlling them are investigated. This method, if skilfully carried out, has the advantage of occupying a relatively short space of time and may be of enormous value in directing attention to new points of view. It, however, suffers from the great drawback that so little is even now known of the nature of pathological changes that the experiments, however carefully conceived, may not actually reproduce these changes, and their interpretation becomes to a certain extent a matter of opinion. By the second method actual cases which have been treated by different means are carefully collected and compared. If care is taken to eliminate certain fallacies this method will give much more definite results, but it is also to a certain extent unsatisfactory, in that a prolonged period of time is occupied in collecting a sufficient amount of material to be of value.

Both methods have the common fault that it is difficult for the observer to approach the problem free from bias and not to attempt, by his experiments or his figures, to prove a certain point rather than to settle an open question. That both methods are far from being perfect is seen by the present position of the treatment of wounds of war. In spite of the fact that the war has lasted for over two years and has provided a number of septic wounds such as has never before been met with, the methods of treatment are still multitudinous. In pre-martial times these methods fell roughly into two groups: the first, which attempted to aid the bodily processes of protection by the use of saline baths, fomentations, Bier's passive congestion, the use of vaccines, and the like; and the second, which attempted to kill or at least to retard the growth of the invading organisms by the use of antiseptics. The majority of modern surgeons had, however, to combat such mild forms of infection that the study of this subject had fallen into neglect, and both methods of treatment must be considered to have reached a stage which was far from approaching perfection.

Since the outbreak of war the extensive researches of Sir Almroth Wright[13] have done an enormous amount to perfect the first or physiological method, and by theoretical arguments he has done much to throw the use of disinfectants into disfavour. Direct evidence in favour of or against the use of disinfectants has not, however, been conclusive. It is a remarkable fact that in spite of the revolution caused by the work of Lister no list of cases, with the exception of a few reported by Sir Watson Cheyne[3] (which throw but little light on the present discussion), has been reported to show the value or failure of Lister's methods as applied to the lesions of the present war. There has been much discussion, not entirely free from acrimony, on the use of antiseptics in general, and Gray[9] has even gone so far as to state that "it mattered not what kind or what strength of antiseptic, pure and simple, was used, the infection ran a fairly definite course of fairly definite duration, which varied merely according to the patient's power of resistance." He, however, brings forward no evidence in support of so sweeping a statement. Carrel,[2] on the other hand, repudiates the view that antiseptics are valueless, but admits that they have often been abused and ill-chosen. He advocates the use of a solution of sodium hypochlorite as prepared by Dakin.[4]

Scope of Investigation.

In this communication we do not propose to approach the problem from the experimental side, nor to discuss the theory of the limitation of infection, nor how repair of a wound takes place, nor whether an antiseptic has penetrating power or simply coagulates the surface albumin, so that under this coagulum the organisms grow freely. In the first place, it appears to us that no one without an expert knowledge of physics and bacteriology, which we feel that we do not possess, is capable of entering into such a discussion; and, in the second place, the subject has been so fully entered into by Sir Almroth Wright,[13] and his views so strongly assailed by Taylor,[12] that no object would be gained by pursuing the subject further. It appears to us that a much more useful purpose will be served by simply reporting a series of cases where different methods of treatment have been carried out. It has already been mentioned that a long time must of necessity elapse before such a series of cases can be collected, and thus it is that we have only now felt that we have sufficient material at our command to warrant us in drawing any definite conclusions. Up to the present no such series of cases has been published. It is true that, on the one hand, Davy,[6] Donaldson, Ailment, and Wright,[7] and Roberts and Statham[10] have published series of cases showing some extremely satisfactory results from the use of salt dressings, but in no case is any note made as to what percentage of the total number of cases treated is formed by those reported, nor is any comparison made with the results of other forms of treatment. On the other hand, Dalton[5] and Fraser[8] report a series of cases showing equally satisfactory results when treated with hypochlorite solution or hypochlorous acid prepared in the manner advocated by Professor Lorrain Smith.[11] Bérard and Lumière[1] also strongly support the use of such solutions without quoting any cases. It will be seen that after the perusal of such accounts the issue is left as much in doubt as formerly.

It is probable that much of this difference of opinion is due to the fact that methods which may succeed when used with cases at the front, shortly after the wounds have been inflicted, may not be so successful when applied to wounds as seen at the London base hospitals, several days after their infliction. It has been our fortune to have had some experience of wounds at the front and a much larger experience of wounds in various London hospitals, and it will be seen from our tables that the treatment which we have employed has been brought into use at very variable times after the infliction of the wounds.

We may say that when the war broke out we held no very strong views in favour of any one method of treatment, and our first series is made up of the cases treated by one of us in the earlier stages of the war at several military hospitals by methods which appear to be fairly representative of those generally used in London. One of us (I. F.) had, however, been treating several septic cases at the beginning of the war with an antiseptic liquid which had given such good results that it was decided to try its effect in cases of military wounds. It appeared to us that its use was so successful that of late we have been using the liquid for the majority of our cases, and this opinion has been confirmed by observation of the results of other methods of treatment as seen in cases arriving from France and elsewhere. Our second series of cases is made up of those treated with this antiseptic.

It is manifestly impossible to report in detail the many hundreds of cases which have come for treatment, nor indeed is it desirable; for the greater number of them have relatively small wounds which will heal rapidly under practically any form of treatment, and the inclusion of these cases will only tend to confuse the results. On the other hand, if a selection be made simply of the more severe cases, there is great danger of choosing those wounds which would tend, perhaps unfairly, to support one or other line of treatment. We have decided, therefore, to take only the cases of compound fracture, and to include every example of this type of injury (other than fracture of the skull) which has been under our care, for it has been our experience that this group will include the greater number of the more severely septic cases. It is true that among them will occur several of less severe injury of bone in which the sepsis is slight, and that many cases of severe sepsis will be omitted, but this will apply probably in an equal degree to both groups, and hence the two tables should form a fair comparison. We have purposely omitted injuries of the skull,

for in the majority of them the lesion of the brain is of paramount importance, and makes the reaction of the tissues to the treatment for the sepsis much more obscure.

Wherever possible we have recorded the method of treatment carried out before the case reached us, but it will be understood that the notes of such previous treatment have of necessity often been very sketchy, and at times it was necessary to supplement them by inquiries from the patient, so that we cannot vouchsafe for their accuracy; but we have thought it wise to include them so that we might, as far as possible, judge of the results of these methods of treatment as carried out by others.

Control Cases.

As our main object is to show the value of one special line of treatment we have grouped all the other cases, whether treated by physiological or antiseptic methods, together in our first table and have called them control cases, but in each case the treatment is described. It will be seen that the results as a whole cannot be considered good. They number in all 21, and of these 4 required amputation owing to failure to control the sepsis and 2 cases died from septic complications. Of the remainder 5—namely, Nos. 3, 4, 8, 10, and 19—were small wounds with only a slight infection which would almost certainly have done well with any kind of treatment. In several cases, it will be noticed, a considerable amount of swelling occurred in the surrounding tissues and the infection tended to spread, so that not uncommonly incisions had to be made to drain localised collections of pus. This generally took place in the first two or three weeks. If we analyse the treatment carried out before the cases were placed under our care we find that severe sepsis occurred with all methods, as is seen in the following table.

Treatment.	Severe sepsis.	Slight sepsis.	Total.
Fomentations	5	2	7
Saline irrigation	2	—	2
„ baths	1	—	1
„ gauze	2	—	2
Salt packs	1	—	1
Dry gauze	4	3	7
Eusol	1	—	1

If, on the other hand, we analyse the results of the methods carried out by us we still find the general results unsatisfactory.

Treatment.	Severe sepsis.	Slight sepsis.	Amputations.	Deaths.	Total.
Fomentations and saline baths	5	—	2	—	5
H_2O_2 and fomentations	2	1	—	1	3
Fomentations	2	4	—	—	6
Eusol	3	1	2	1	4
Dry gauze	—	1	—	—	1
Healed	—	—	—	—	2

The figures in the individual groups are too small for any great attention to be paid to them, but it is hoped that in the future this drawback will be removed by the publication of larger lists which will include all cases treated by any one method. They are also probably misleading, in that the treatment was to a certain extent selective, so that the methods which in the above table appear to give the worst results were applied to the most severe cases because they were regarded as being the most likely to control sepsis. It is when the figures are considered collectively that the results are seen to be unsatisfactory, but since these results are given by various forms of treatment they will act as a good basis of comparison with other methods.

Cases Treated with the Antiseptic.

We propose before considering the cases themselves to describe briefly the antiseptic we advocate and the method of its application. The antiseptic itself is by no means new and we do not claim any originality in its use; we only wish to point out that extremely beneficial results are obtained with it, and we hope, therefore, that it may be given a more extended trial. It is prepared by rubbing together in a mortar crystals of pure carbolic acid and camphor in equal parts by weight—a perfectly clean sweet-smelling liquid being thus obtained.

As is the case when using any other application, it is primarily essential to provide adequate drainage. When seen in a relatively early stage the wound, if deep or punctured, should be opened under general anæsthesia so as to eliminate, as far as possible, any pockets in the tissues and all foreign bodies, loose pieces of bone, or necrotic tissue should be removed. When the wound has been freely opened sufficient of the liquid is poured in to reach the whole surface of the tissues. In large wounds as much as one or two fluid ounces may be required, although as a general rule one or more fluid drachms are sufficient. Drainage-tubes are inserted as required and packed round with gauze soaked in the fluid. On the surface dry gauze is applied. It is only necessary to change the dressing every 48 hours, when a few drops of the fluid are poured down the tube and fresh soaked gauze applied to the raw surfaces. When the treatment is commenced some days or weeks after the infliction of the wound it is again necessary to open up all sinuses and pockets so that the fluid may reach all the septic areas, and if necessary tubes should be inserted so that free drainage is established. The fluid is then used in the same manner as previously. It is noteworthy that the fluid can be handled freely without doing any harm to the skin, but if left for a prolonged period in contact with the patient's skin around the wound a certain amount of burning may be caused; for this reason surface dressings should be formed of dry gauze. It is rarely necessary to smear the surrounding skin with sterilised vaseline.

The effects of the fluid, if applied shortly after the wound is inflicted, are, firstly, to dry the surface of the wound. The tissues become covered with a thin white slough, which at first remains moist, so that the wound looks as though it were covered with a layer of moist cotton-wool. In one or two days this slough dries and there only remains a small amount of serum in the depth of the wound. All foul odour rapidly disappears.

If the wound is seen in a later stage, when there is already a large quantity of pus present, a more prolonged period elapses before the surface of the wound dries, and we have frequently noticed that, if there is a pocket of pus undrained into which the antiseptic does not enter, the surface will not dry. In such cases a large quantity of pus will escape with each dressing, although the sepsis remains localised. Such a condition is an indication for further drainage. Doubtless, under such circumstances, the carbolic is rapidly diluted by the fluid passing from the pocket, and thus loses its effect. After the pocket has been opened the drying effect is soon seen. It will be noticed that several of our cases continued to have a large amount of discharge until more free drainage was provided, after which it rapidly ceased. Since this drying effect is so marked it is essential that this method of treatment should not be combined with other methods. If the wound be syringed out with saline or peroxide each time it is dressed the good effects of the carbolic mixture will be lost.

In a few days, 3–7, after the formation of the sloughs they begin to separate, leaving behind a healthy surface of dry granulation tissue, which rapidly contracts until the wound is healed. In some cases it happens that after the cavity of the wound has filled up, the further application of the mixture seems to hinder the growth of the surrounding epithelium, in which case it should be discontinued and a more soothing application used.

Of more importance than the effects upon the surface of the wound are the general changes. Within one or two days of its application all redness and swelling disappear, the surrounding tissues become soft and flaccid, and with this the temperature falls to normal. In our experience this effect is in marked contrast to that often following other methods of treatment, especially the use of baths. In more severe cases the latter form of treatment is often followed by great swelling of the surrounding tissues, which become red and boggy, and local collections of pus form until the limb shows a spreading cellulitis. Multiple incisions have to be made, or in many cases the limb has to be amputated. In not one of our cases treated with the carbolic mixture has such a condition arisen. The worst that has ever happened has been the discharge of a large amount of pus from an insufficiently drained pocket, or, if the exit be occluded, the formation of a local abscess. Not only was it never necessary to amputate a limb, but in several cases treated by other methods amputation was considered, but when the treatment was changed to the carbolic mixture the symptoms rapidly improved and the limb was saved. (*Vide* Cases Nos. 22, 24, 26, and 30.)

Two other factors are of very considerable value. The first is the absence of pain. When the first dressing is applied there may be considerable smarting lasting for one or two hours. After this the anæsthetic value of the

TABLE I.—CONTROL CASES.

No.	Age	History.	Condition on admission.	Treatment.	Progress.
1	35	Wounded, Gallipoli, July, 1915, left calf, knee, femur. Opened and drained, fomentations.	3 10 15: Septic absorption. T. 103°. Extensive septic wound of left calf, septic compound fracture left femur; 5 in. shortening; bedsores.	Tubes and fomentations in Egypt. Fomentations and later saline baths, England.	Septic absorption increased; 2 weeks after admission large abscess in thigh. 5/11/15: Amputation hip-joint. Slow but steady improvement; discharged 8/1/16.
2	33	Wounded, 1 7 16; H.E. shell tore open front of r leg. Operation, C.C.S.; saline irrigation.	10 7 16: Large foul wound 6 × 3 in. front of lower r. tibia; bare tibia at bottom; edges grey black, foul discharge. T. 103°.	Saline irrigations in France. H_2O_2, tubes, fomentations.	Sepsis increased, odour disappeared, spreading œdema; much pus. In 4th week septicæmia. Pulm. embolism. Died.
3	40	Wounded, 10 7 15, rifle bullet left shoulder; wounds small, clean. Bone wired, Malta.	23 9 15: Healed wound left shoulder; small septic wound below coracoid. Operation wound upper part of shaft septic below; wired fracture upper end of humerus.	Tubes, fomentations.	Sepsis decreased. Sinuses closed.
4	29	Wounded, 8 8 15, Gallipoli; rifle bullet left shoulder. Exit wound drained at Cairo.	25 9 15: Small septic entry wounds over l. scapula and front of l. shoulder. Comminuted fracture humerus; no union.	Fomentations, tubes, Egypt. Fomentations, England.	Healed slowly; few sequestra came away. Sinus for 2 months.
5	19	Wounded, 25 9 15, France; rifle bullet entered left wrist, exit left elbow, operation same day; tubes inserted, bone fragments removed; saline and gauze dressings.	4 10 15: Much swelling l. forearm; large septic exit wound outer side of elbow; 2 large incisions outer side of forearm. Many fragments radius, ulna, and humerus. T. 103°.	Saline gauze in France. Saline baths 2 hourly twice daily. Fomentations in England.	Arm became very boggy and swollen. T. 101°–103°, 3 weeks. Large abscess opened. 9/11/15: Amputation considered; abscess opened; gradual improvement. 25/8/16: Still small sinus; firm bony ankylosis at elbow; hand movements good.
6	21	Wounded, 25 9 15, France; rifle bullet through left elbow. Both wounds enlarged and drained in Rouen.	1 10 15: Entry wound 2 in. below ext. condyle 2 in. wide. Exit wound inner side of elbow 3 × 2 in., septic. X ray = fracture of radius and ulna; good position; no comminution.	Tubes and fomentations in France. Saline baths and fomentations as in Case 5.	Arm became very swollen. T. 101° one week. Gradually improved; wounds healed. 18/1/16: Ankylosis of elbow.
7	25	Wounded, 26 9 15, France, by rifle bullet passing through left arm above elbow antero-posteriorly.	2 10 15: Small w., entry post.-ext. aspect l. elbow. Exit w. 1 in. sq. 2 in. above. int. condyle. Much swelling whole elbow. T. 101°. X ray = oblique fracture l. humerus entering joint.	Dry gauze in France. Tubes and fomentations in England.	Sepsis rapidly improved; swelling decreased in 2 weeks. 30/10/15: Entry wound healed. Exit wound clean; nearly healed. 5/11/15: Healed; movements fair.
8	33	Wounded, 3/8/15, shrapnel, in Gallipoli; fracture of r. tibia and fibula. Two operations Alexandria; bullet removed, drained.	13/10/15: Small healed entry wound middle r. calf. Exit wound middle r. fibula, enlarged by surgeon. Quite healed. X ray = old comminuted fracture of tibia; no union	Tubes, fomentations, and saline baths Alexandria.	5/11/15: Doing well; plaster applied. 4/12/15: Good union; wounds soundly healed.
9	38	12/10/15, Gallipoli; shrapnel back of l. arm. Two operations on s.s. *Dongola*; bullet and portions of bone removed; drained.	27/10/15: 2-in. irregular entry w, 5 in. above l. olecranon; pus. Two w. in forearm 5 and 2 in. below elbow; granulating. X ray = fracture of humerus 2 in. above elbow; no union.	Tubes and fomentations in Egypt. Fomentations in England.	Good progress. Wounds healed well; good union of bone. Later myositis ossificans of brachialis anticus, requiring operation.
10	32	Wounded, 23/9/15, Gallipoli; rifle bullet through knee; effusion into joint followed. X ray at Cairo.	31/10/15: Entry w., small, healed, 1 in. above ext. con., left femur. Exit w. small, healed. Slight effusion into joint. X ray shows portion of bone chipped out of post. surface of femur.	Dry dressing in Egypt. Supporting bandage in England.	Wounds already healed.
11	25	Wounded, 1 7 16, La Boiselle; rifle bullet through r. leg; fell; hit by second bullet in l. leg. No dressing 24 hours. Cleaned under anæsthetic C.C.S. next day.	5 7 16: Two small healing wounds l. leg. Small wound of entry r. leg., 3 in. below tubercle of tibia. Exit wound 3 × 1 in. over anterior border of tibia; much swelling. T. 102°. Comminuted fracture upper end of tibia.	Saline irrigation in France. Fomentations, tube, syringed H_2O_2, England.	Sepsis slowly improved. 12/8/16: Soft union of bones; still small sinus. 23/8/16: Sinus; small sequestra have escaped. 27/9/16: Scraped. 20/10/16: Healed.
12	50	Wounded, 1 7 16, La Boiselle; machine-gun bullet through r. wrist; arm useless at once; fingers quite numb.	8 7 16: Very septic wounds, 2 × 3 in., inner and outer sides of r. wrist. Much swelling hand and arm. T. 102°. Much pus and foul fluid. X ray = comminuted fractures radius, ulna, and carpal bones.	Gauze soaked in saline in France. Tube, eusol baths 3 hourly, fomentations, in England.	16/7/16: T. 101°. Much swelling of wrist; pus from both wounds; very slow improvement of sepsis later. 3/8/16: T. normal; swelling less. 28/9/16: Ulnar wound healed; still sinus radial side; no use in hand.
13	32	Wounded, 1 7 16, France; hit in r. arm. Crawled to shell hole, then rifle bullets through both ankles. Arrived in England 3/7/16.	Wound of soft tissues left forearm, 3 × 2 in., very septic. Wound of soft tissues left ankle, small but septic. Wounds r. ankle 1½ × 1 in. Comminuted fractures of tarsal bones. Much swelling. T. 102°. Wounds foul.	Dry dressings in France. Tubes, fomentations, 3 hourly eusol baths, England.	Wounds of arm and r. ankle rapidly improved. Wound of l. ankle became more swollen and septic. T. 103°. 15/7/16: Amputation site of election l. leg. 5 days later pulmonary abscess and septicæmia. Died.
14	28	Wounded, 1 7 16, France; piece of H.E. shell entered l. forearm; lost use of arm. To C.C.S., opened under anæsthesia; washed in eusol. Taken to Rouen.	6 7 16: Large irregular wound, 4 × 2 in. outer side of l. elbow. Muscles torn and very septic. Comminuted fractures of radius and ulna. Arm very swollen. T. 102°.	Eusol and fomentations, France. Wounds opened, tubes, eusol baths 2 hourly, fomentations, England.	Wound cleaned a little; sloughs came away. Limb remained very swollen. Much pus; secondary hæmorrhage 3rd week; sepsis spreading. 7/8/16: Arm amputated; stump healed well.
15	35	Wounded, 1 7 16; fragment of H.E. shell struck a forearm and wrist. Iodine and dry dressing.	6 7 16: Irregular wound dorsum of r. wrist, 2 × 1 in. Comminuted fracture of carpal bones. Much swelling hand and arm. T. 101°.	Fomentations in France. Tubes, eusol baths 2 hourly, fomentations.	Progressed favourably; swelling decreased after 2 weeks; discharge lessened. 2/8/16: Residual abscess dorsum of hand opened. Healed rapidly. 3/9/16: Wounds healed; some movement at wrist.
16	26	Wounded, 7/5/16; fragment H.E. shell entered r. upper arm; fractured humerus. Wound opened C.C.S., tube inserted.	1/6/16: Irregular septic wound outer aspect middle of r. upper arm; tube *in situ*. Comminuted fracture of humerus. Much pus and swelling of arm. T. 101°. Muscule-spiral nerve involved.	Tubes and fomentations, England.	Sepsis gradually decreased but on two occasions wound had to be reopened for collections of pus. 18/8/16: Still sinuses; sequestra removed; good union. 9/9/16: Still small sinus.
17	35	Wounded, 1 7 16, in Thiepval, by shrapnel. Chest and r. wrist; lay out 6 hours. Wound of chest excised at base hospital, both wounds packed with salt tablets.	8/7/16: Large septic wound 9 × 3 in. across chest. Perforating wound r. carpus. Large septic wounds; foul discharge. Much swelling of hand and arm. T. 103°. X ray = much comminution of carpus.	Excision of wound, salt packs in France; tube in wrist. Saline baths, fomentations, England.	Sepsis in arm increased. 10/7/16: Opened, pus spreading up muscles of arm. 13/7/16: Amputation upper arm. 20/7/16: Pyæmic abscess leg and left shoulder, opened; very slow progress. 27/9/16: Wounds nearly healed.
18	32	Wounded, France, 5/11/14; rifle bullet wound of l. elbow; bullet passed from outer to inner sides. Iodine and dry dressing, C.C.S.	9/11/14: Septic wound outer side of l. elbow, 2 × 1 in. Large irregular wound inner side of elbow. Comminuted fracture lower end of humerus and upper end of ulna. Division of ulnar nerve.	Iodine and dry dressing, France. Tubes, saline baths, and fomentations, England.	Severely wounded; surrounding cellulitis required further incisions; sepsis gradually decreased. 28/12/14: Small sinus only. 23/1/15: Returned from C.H. Firm bony union at elbow; still sinus; no recovery ulnar nerve.
19	19	18/1/15, France; rifle bullet wound l. upper arm. Dry dressings at C.C.S. 7/9/15: Operation Etaples; bone fragments removed.	19/9/15: Two small wounds, inner and outer sides of l. arm, nearly healed. Fracture of lower third of humerus in very bad position. Injury of musculo-spiral nerve.	Dry dressings, H_2O_2, France. Dry dressings, England.	Wounds completely healed 1 week after coming to England. 14/10/15: Operation for injury of musculo-spiral nerve.
20	20	Wounded, 2/11/14, France; rifle bullet wound r. upper arm; fracture of humerus. Wounds cleaned under anæsthetic.	10/11/14: Small septic wound inner side r. arm. Large irregular wound on outer side of arm 4 in above elbow. Muscle torn, septic; arm swollen. T. 102°. Comminuted fracture of humerus.	Tubes, dry dressings, France. Fomentations, syringed H_2O_2, England.	Wound gradually cleaned; healed except for small sinus. 10/12/15: Sent to C.H. Returned 8/1/15. Large abscess opened, drained.
21	25	Wounded, 18/1/15, France; rifle bullet entered l. forearm. Walked to dressing station. Dry dressing. To C.C.S.; wound cleaned.	24/1/15: Small wound of entry front of forearm 3 in. above wrist. Septic wound of exit. Posterior surface 1 in. square, 2 in. above wrist. Muscle covered with sloughs. Comminuted fracture of ulna.	Dry dressings in France. Tubes, fomentations, in England.	Second abscess opened 14/2/15. Ultimately healed 3/3/15. Sepsis steadily decreased; slight swelling for first week. Nearly healed after 4 weeks; commencing union. 18/3/15: Discharged healed.

TABLE II.—CASES TREATED WITH CARBOLIC MIXTURE.

No.	Age	History.	Condition on admission.	Treatment.	Progress.
22	29	Wounded, France, 19/7/16; rifle bullet through l. elbow; humerus and ulna smashed. No operation.	24/7/16: Huge wound l. elbow; whole joint shot away; many loose fragments of bone. Much pus and sloughing of tissues. Hand movements good. T. 102°.	Dry gauze in France. Fomentations and saline baths; later, carbolic and camphor.	Wound cleaned with baths and fomentations, but T. 102°, and much swelling of arm. 3/8/16: T. 103°. Swelling increased, amputation considered. Lower end of humerus removed; wound freely opened; filled with carbolic. In 4 days T. normal. No swelling. 10/10/16: Clean wound nearly healed. 4/11/16: Sinuses only; no movement at elbow.
23	30	Wounded, France, 5/8/16; portion of H.E shell l. upper arm. Walked to dressing station; first-aid dressing; wound cleaned and splint at clearing station.	8/9/16: Small irregular wound l. upper arm; much swelling; foul-smelling pus. T. 101°. X ray = comminuted fracture neck of humerus.	Dry dressings in France. Fomentations; later, carbolic and camphor in England.	Slight improvement. Later, collection of pus below wound. Carbolic and camphor injected 15/9/16. Still much pus; wound did not dry; opened 22/9/16. Rapid improvement; healed, 9/10/16.
24	25	Wounded, France, 5/8/16; fragment H.E. shell outer side l. upper arm. At c.c.s. tube inserted; saline irrigation.	14/8/16: Irregular wound outer side l. upper arm; much pus and sloughs; wound 3 × 2 in.; bare bone. Comminuted fracture neck of humerus. Considerable swelling. T. 102°.	Tubes, saline irrigation, France. Fomentations; later, carbolic and camphor, England.	At first but little progress. Much pus and swelling after 4 weeks. Carbolic and camphor then injected. Rapidly improved; pus decreased; swelling disappeared. Healed in 2 more weeks.
25	21	Wounded, Guillemont, 16/8/16; rifle bullet r. arm. Lay in shell-hole 3 hours; field dressing. Rouen on 19th; operation; F.B. removed; wound packed salt tablets and gauze.	23/8/16: Large wound outer side r. arm. Smaller wound inner side. Both foul. Pus and sloughs. T. 103°. Some swelling and redness around. X ray = comminuted fracture of humerus.	Salt packs in France. Carbolic and camphor in England.	T. normal next day; swelling all disappeared in 2 days. 15/9/16: T. normal; no swelling; little pus. 6/10/16: Small sinus, good union. 4/11/16: Healed.
26	26	Wounded in France, 6/8/16; rifle bullet through r. foot; field dressing. Next day anæsthetic; pieces of bone and boot leather removed from wound in sole; saline irrigations.	10/8/16: Small septic wound in front l. ankle. Wound 2½ in. diameter on sole; much slough, bone fragments, and foreign matter. Tendons and muscles all destroyed; redness and œdema of whole foot. Comminuted fracture of tarsus; several boot-nails in bone.	Saline irrigations in France. Immediate amputation considered, but carbolic tried.	In 2 days T. normal; swelling rapidly decreasing. On 14th many sloughs with 2 nails and pieces of leather came away. 15/9/16: Clean; rapidly healing; no swelling. 29/9/16: Walking; small sinus only; perfect ankle movements.
27	24	Wounded, 7/8/16, France; rifle bullets through l. arm and l. thigh. At dressing station, tubes; wounds irrigated H_2O_2.	10/8/16: Wounds inner and outer aspects of l. arm; both very septic. Pus and sloughs; swelling of whole arm. Fracture of humerus 2 in. above elbow. Two very septic wounds in l. thigh. T. 102°.	Irrigations H_2O_2, gauze dressings France. Carbolic and camphor on gauze, England.	Rapid improvement. 16th: T. normal; no swelling or pain; wounds dry. 15/9/16: Wounds rapidly healing. 6/10/16: Small sinuses; good union. 2/11/16: Wounds healed.
28	40	Wounded, 16/8/16, Guillemont; shrapnel in l. leg. 17/9/16: Operation, wound cleaned; no tube.	20/8/16: Irregular septic wound 2 in. middle of l. tibia; much pus; muscles sloughing. Fragments of tibia in bottom of wound. Piece of shrapnel between fragments. Swelling surrounding tissues. T. 101°. X ray = comminuted fracture of tibia.	Gauze soaked in saline in France. Gas; fragment of shrapnel removed. Tube; carbolic and camphor in wound.	22/9/16: No swelling; T. normal; pus less. 5/10/16: Wound clean; bone covered; no pain or swelling. 12/10/16: Small healing wound; no bare bone. 1/11/16: Small sinus only.
29	22	Wounded, 14/8/16, France; H.E. shell; fragment entered behind r. elbow and emerged in forearm.	22/8/16: Round wound 1 in. over r. olecranon; contained pieces of coat; very septic. Large irregular wound upper forearm; muscle very lacerated; much pus and sloughing. Fracture of ulna. T. 101°. Arm very swollen.	Packs of gauze soaked in saline. Tubes; carbolic and camphor in England.	First 2 days drainage insufficient; tubes then inserted. Next day swelling much less; T. normal. 5/10/16: Clean wounds; T. 98°; no swelling. 3/11/16: Small sinus only; good union.
30	20	Wounded, 8/8/16, Delville Wood; rifle bullet in back of neck. Operation Rouen 9th, bullet removed.	8/8/16: Irregular wound 3 × 2 in. back of neck. Spines 4 5, 6 c. v. fractured. Many sloughs; muscle much lacerated; very foul. T. 101°.	Gauze wrung out in saline in France. Carbolic and camphor in England.	Next day T. normal; no swelling. In 4 days wound covered with clean granulation tissue. 5/10/16: Small surface wound only. 12/10/16: Healed.
31	29	Wounded, 15/8/16, High Wood; H.E. shell; l. arm smashed. Injury to r. arm. Lying out 9 hours. L. arm amputated next day, c.c.s.	21/8/16: Circular amputation middle of l. humerus. No flaps; large wound outer side removing all deltoid; wound 5 × 4 in. Wound 3 × 2 in. ulnar side of r. forearm; similar wound radial side; free communication. Bare tendons crossing; piece of ulna removed. All wounds very septic; foul odour. T. 102·5°.	Dry gauze in France. All wounds packed with gauze soaked in carbolic and camphor.	23/9/16: Wounds much cleaner; T. 100°. No odour, no swelling, drying. 15/10/16: Wounds quite clean; all sloughs away; clean granulation tissue; T. normal; no swelling at all. 6/11/16: Superficial clean granulating wounds rapidly healing.
32	41	Wounded, 4/8/16; rifle bullet through r. thigh 6 in. above knee. At c.c.s. posterior splint; dry gauze dressing.	15/9/16: Clean wound of entry front of r. thigh 6 in. above knee; 2 in. wound posteriorly; very septic, much pus. X ray = transverse fracture of femur; backward displacement lower fragment. T. 101·1°. Swelling of thigh and knee.	Dry gauze in France. Wound packed with gauze soaked in carbolic and camphor. Fragments manipulated under anæsthetic; extension.	Wound rapidly cleaned. 20/9/16: T. normal; no swelling. 12/10/16: Wound nearly healed; commencing union of fracture. 7/11/16: Wound healed; good union.
33	28	Wounded, 15/8/16; shrapnel in r. shoulder; c.c.s. wound plugged; splint. At Boulogne plugging changed; saline gauze.	21/8/16: Small wound of entry outer side of r. shoulder; much pus escaping; great swelling of shoulder and upper arm. T. 101°. X ray = oblique fracture of shaft of humerus; piece of shrapnel on bone.	Saline gauze in France. Tube inserted; carbolic and camphor run down into wound.	Rapidly improved; T. fell to normal in 2 days. 29/9/16: Very little pus; no swelling. 6/10/16: Tube out; no swelling; no pain. 4/11/16: Small sinus only; good union.
34	23	Wounded, 15/8/16; rifle bullet through l. arm. c.c.s. gauze dressing only. At Etaples splint applied; still dry dressings.	24/8/16: Small entry wound posterior border of l. axilla; wound of exit middle of outer surface of arm. Much pus; swelling of whole upper arm. T. 100°. Humerus fractured in centre; Musculo-spiral paralysis.	Dry dressings in France. Carbolic and camphor on gauze plugging.	29/9/16: Swelling less but drainage not very good; much pus can be squeezed out. 3/10/16: Anæsthetic, wounds opened; tubes. 10/10/16: Much better; T. normal; no swelling; less pus; local abscesses opened 18th and 7/11/16. Healed 20/11/16.
35	27	Wounded, 3/9/16, Guillemont; rifle bullet entered l. heel, and was removed from between 2nd and 3rd toes; out for 2½ days. 11/9/16: Saline irrigation commenced.	16/9/16: Septic wound of entry centre of l. heel. Irregular wound between 2nd and 3rd toes. Swelling of whole foot. T. 100°. X ray = fracture of os calcis and head of 3rd metatarsal bone.	Dry dressing; later saline irrigation, France. Carbolic and camphor dressing.	Swelling and discharge rapidly decreased. 29/9/16: Slight pain and swelling centre of sole. 1/10/16: Small abscess in sole opened. 10/10/16: All wounds nearly healed; T. normal; no swelling. 7/11/16 healed.
36	32	Wounded, 24/8/16, H.E. shell fragments in neck and r. arm. Operation same night; tubes.	29/8/16: Over lower and inner r. humerus wound 2 × 2 in., deep and septic. Exit wound middle of post. aspect of forearm 3 × 2 in.; very foul and septic. Movements at elbow limited. Sensory loss ulnar area of hand. Fracture of int. condyle of humerus. T. 102°.	Gauze soaked in saline in France. Carbolic and camphor.	Rapidly improved. 4/9/16: T. normal; no swelling; wounds drying; white sloughs. 18/9/16: Wounds nearly healed. 2/10/16: Still small unhealed area, upper wound; movements good. 18/10/16: Wounds healed.

TABLE II.—CASES TREATED WITH CARBOLIC MIXTURE (*Continued*).

TABLE II.—CASES TREATED WITH CARBOLIC MIXTURE (*Continued*).

No.	Age	History.	Condition on admission.	Treatment.	Progress.
37	31	Wounded, 16/9/16, France; shrapnel struck r. leg. Fell but soon able to walk ¼ mile. At Le Touquet shrapnel removed from head of r. tibia.	25/9/16: 3 in. incision over head of r. fibula; pus and gas bubbles escaping. Redness and œdema of whole leg; knee flexed, joint very tense. T. 104·8°. Knee aspirated; much pus; opened freely each side of patella. Synovial membrane and part of cartilage destroyed.	Syringed with H_2O_2. Fomentations in France. Joint swabbed out and packed with gauze soaked in carbolic and camphor; tubes. Wound ditto.	T. fell but little in 2 days. Much pus escaping from joint wounds; swelling of leg rapidly decreasing; counter opening into joint behind; rapid improvement. 16/10/16: T. normal; wounds drying; no swelling. 8/11/16: Doing well; sinuses only; knee ankylosed.
38	34	Wounded, 17/9/16, France, by hand grenade; r. leg broken; operation same day; wounds opened; Carrel's treatment 3 days. Fracture pegged. Eusol irrigation continued through tubes whilst in train.	25/9/16: Large raw wound 5 × 3 in. over centre of r. tibia. Many sloughs and much pus. Fracture of tibia in centre of wound. Bone bare and dead 1½ in. either side of fracture. T. 100°. Swelling of leg.	Carrel's treatment 3 days in France, followed by eusol dressing. Carbolic and camphor in England.	Slight improvement first few days. Then inadequate drainage owing to fragments overlapping. Bone plated 14/10/16, 3 tubes. 8/11/16: Doing well; still pus; T. normal; bone nearly covered; no swelling. 21/11/16: Much cleaner; X ray shows good involucrum.
39	35	Wounded, 16/9/16. France; rifle bullet through r. foot. Operation 18th at Etaples: wound opened, tube inserted.	24/9/16: Perforation r. foot at base 3rd toe; both wounds very septic. T. 101°. Swelling of distal half of foot. X ray = fracture of 3rd metatarsal and phalanx.	Tube and fomentations in France. Carbolic acid and camphor in England.	Wounds rapidly improved. On second day T. normal; no swelling; still pus. 14/10/16: Nearly healed; very little pus. 8/11/16: Healed.
40	35	Wounded, 3/9/16, France; piece of shrapnel entered back. 10 hours later operation at C.C.S.; wound opened; dura found opened; dry gauze dressings.	5/9/16: Large septic wound to l. of lower lumbar vertebræ; edges covered with foul sloughs. Broken bone felt at bottom of wound; cerebro-spinal fluid escaping. Cauda equina lesion.	Dry dressing, France. Carbolic and camphor, England.	Wound rapidly cleaned. No escape of C.S.F on 20th; reappeared on 25th; ceased again on 28th. 10/10/16: Wound quite clean; still deep sinus. 8/11/16: Small sinus only.
41	22	Wounded, 15/9/16, High Wood; piece of H.E. shell entered outer side of r. knee. Buried; dug out at once. Field dressing. At Etaples syringed H_2O_2; saline gauze.	21/9/16: Large, irregular wound outer side of r. knee. Septic, covered with sloughs. Good deal of pus. Comminuted fracture post. surface of condyles of femur; tissues around swollen. T. 101°.	Saline gauze and H_2O_2. France. Carbolic and camphor in England.	Wound rapidly cleaned; T. normal in 3 days; all swelling and pain ceased. 12/10/16: Wound healing rapidly; no swelling or pain. 6/11/16: Wound healed.
42	22	Wounded, 23/9/16. High Wood; shrapnel entered l. thigh near lower third; felt at once. Wooden splint and dry dressing at C.C.S. Next day wound opened; tube, saline gauze. Bullet removed on 27th.	10/10/16: Small septic wound anterior of inner surface of l. thigh 4 in. above knee. Exit wound postero-external surface; large, septic, pus. T. 99°. Swelling of limb; comminuted fracture of femur.	Saline gauze and drainage, France. Carbolic and camphor, England.	16/10/16: Doing well; T. normal; no swelling. 7/11/16: Good union; still small sinus posteriorly; T. normal; no swelling or pain.
43	22	Wounded, 15/9/16, Delville Wood; rifle bullet through r. leg. In shell-hole 7 hours. Opened at C.C.S. on 16th; dressed gauze soaked in eusol.	24/9/16: Wound 2½ × 2 in. over anterior of upper part of r. tibia. Bare fragments of bone in centre; very septic. T. 101°. Considerable swelling of leg; healed wound in calf. Comminuted fracture of tibia.	Eusol gauze in France. Carbolic and camphor, England.	At first drainage not satisfactory; fragments of loose and dead bone removed. 12/10/16: Clean cavity in bone; no swelling. 6/11/16: Still little pus from sinus; good union.
44	22	Wounded, 25/9/16, Flers; pieces of H.E. shell struck r. foot and l. ankle. Field dressing. 2 days later at base hospital H_2O_2 baths.	11/10/16: Large wedge-shaped wound across r. heel. Lower part of os calcis and part of astragalus shot away. Post. part of heel dropping backwards; gap 2½ in. wide; good deal of swelling; much pus and sloughing. T. 101°.	Dry dressing and H_2O_2 baths in France. Carbolic and camphor, England.	Rapid improvement; in 2 days T. normal; no swelling. 30/10/16: Wound clean; T. normal; no swelling. 8/11/16: Healing; still cavity with bare bone. 21/11/16: Cavity rapidly decreasing.
45	30	Wounded, 1/5/15, France; multiple shell wounds l. thigh. Splint and dry dressings. France.	11/5/15: Large foul wounds in front of l. thigh 5 × 3 in. and 2 × 1 in.; much pus. T. 100°. Sloughing of muscles; femoral vessels exposed. X ray = linear fracture of ilium; complete fracture of femur.	Dry dressings, France. H_2O_2 fomentations, England; later, carbolic and camphor.	Very little progress. 20/5/15: Wounds sloughing; much pus; pain severe; T. 100°–102°; several fragments of bone came away. 11/6/15: Abscesses opened. 2/7/16: Carbolic applied; T. normal next day, never rose; wounds rapidly healed. 19/8/16: Splint removed; clean granulations in wounds. 8/9/16: Wounds healed.
46	33	Wounded, 13/7/16, France; shrapnel wound r. thigh. Saline dressing and Thomas knee splint at base.	18/7/16: Large, irregular wound outer side lower r. thigh. Muscles much lacerated; wound very foul. T. 102°. X ray shows transverse comminuted fracture lower third of femur.	Saline gauze in France. Camphor and carbolic, England.	Rapid improvement, but tendency for pus to collect around fragments; two small abscesses opened 4/9/16. Oct. 1st doing well; T. normal; still purulent discharge. 8/11/16: Small sinus only.
47	23	Wounded, 1/9/16, Guillemont; machine-gun bullet through l. thigh. Opened and drained at base; Thomas splint and saline dressings.	11/9/16: Wounds 5 × 4 in. front of l. thigh, 7 × 6 in. back of thigh. Much pus, sloughing, and foul odour. Tube right through; swelling of tissues around. T. 100°. X ray = comminuted fracture middle of femur.	Saline gauze, France. Camphor and carbolic, England.	Rapidly improved; T. normal in 2 days; all swelling and pain decreased. 12/10/16: Ant. wound healed; post. still a little sero pus; no swelling or pain. 8/11/16: Healed; good union.
48	36	Wounded, 4/9/16, Somme; several machine-gun bullets through r. scapula. Anæsthetic at base; wound opened; pieces of bone removed.	11/9/16: Large foul wound over r. scapula. Large portion of scapula absent. Intercostal muscles exposed. Much pus and sloughing muscle. T. 100°.	Saline gauze, France. Camphor and carbolic, England.	Pain ceased at once; wound quite clean and granulating in a week. 16/10/16: Wound one-third of its original size, quite clean. 7/11/16: Healed, irregular scar, good movements.
49	28	Wounded, 6/9/16, Somme; shrapnel bullet through l. foot; operation next day; foreign matter removed; wound drained.	11/9/16: Wounds small, 1 in. below each malleolus. Foul purulent discharge; much swelling of foot. T. 102°. X ray = comminuted fracture of astragalus.	Saline gauze in France. Camphor and carbolic, England.	Swelling and pain decreased immediately. On 2/10/16 local abscess opened; after this rapidly improved. 18/10/16: Wounds clean, healing. 8/11/16: Small sinus only.
50	27	Wounded, 30/9/16. Somme; shrapnel wound l. shoulder. Operation 4/10/16; metal removed.	13/10/16: Large wound under l. clavicle; very septic; bare bone in wound. T. 99·5°. Swelling of the whole shoulder. X ray = fracture clavicle and acromion.	Syringed H_2O_2; dry dressing, France. Camphor and carbolic, England.	18/10/16: T. normal, no swelling. 30/10/16: Wound granulating; T. normal; no swelling. 7/11/16: Healing rapidly.
51	30	Wounded, 3/10/16, Flers; H.E. shell through l. leg. Eusol dressings applied twice daily since.	13/10/16: Large irregular wound outer side l. leg. 3 × 4 in. Fractured fibula, sloughing tendons and muscles. Swelling of foot. T. 100°.	Eusol dressings. France. Carbolic and camphor, England.	Wound rapidly cleaned. 16/10/16: Whole of peroneus longus came away as a slough; T. normal. 8/11/16: Healing rapidly.
52	25	Wounded, 26/9/16, France; bullet through l. foot. Lay out 24 hours with field dressing on. At dressing station eusol compresses applied.	10/10/6: Small wound of entry l. heel. Large irregular wound dorsum of foot. Much foul pus; whole foot swollen. T. 100°. X ray = comminuted fracture of os calcis and astragalus.	Eusol gauze in France. Carbolic and camphor, England.	Rapidly improved; all swelling disappeared in 2 days; T. normal. 16/10/16: Entry wound healed; exit clean. 7/11/16: Wound very small, nearly healed.
53	29	Wounded, 27/9/16; portion of H.E. shell through l. thigh. Lay out 22 hours, operation 2 days later; piece of shell removed; drained: eusol dressings.	12/10/16: Healed wound anterior aspect lower third of l. thigh. Large irregular wound back of thigh, 4 × 3 in. Much pus and sloughing; swelling of thigh. T. 100°.	Eusol dressings in France. Carbolic and camphor, England.	20/10/16: T. normal; no swelling, good deal of pus. 30/10/16: Wounds cleaning; T. normal. 8/11/16: Small sinus posteriorly. Commencing union. 21/11/16: Good union, wound healed.

carbolic is felt, and no pain is experienced when the dressing is changed. The second factor is the infrequency with which the dressings have to be changed, as a general rule once in 48 hours being sufficient. This fact, to our minds, strongly recommends the use of this dressing to cases about to be sent from France to this country, for in them attention to the wound has of necessity to be interrupted. Strangely enough, Sir Almroth Wright states that this "increases a hundredfold the difficulties which stand in the way of a successful application of antiseptics." It appears to us, on the contrary, that the application of antiseptics by the method we advocate is much more readily carried out under such circumstances than any form of irrigation of the wounds with saline, for most cases will be able to complete the journey without the dressings having to be changed.

To cases in London hospitals also not only does this fact mean much less disturbance and discomfort to the patient, but it very materially lightens the work of the nursing staff, a fact of great importance after a big attack when all the wards may be filled with a number of severely wounded men. Since all foul odour rapidly disappears the comfort of the patient himself and of others in the ward will be greatly increased.

Four Questions of Interest.

During the time we have used this method four questions of interest have arisen. The first is one to which much attention has been paid—namely: Can a septic wound be rendered aseptic by the application of antiseptics? This question is, of course, far from clear, for it ignores entirely the time factor. If it means can the wound ultimately be rendered aseptic, we would answer that, in company with any other method which leads to healing, it does render it aseptic. If, on the other hand, it means can the wound be immediately made aseptic, we would endorse the view that no antiseptic, nor any other treatment that has been devised by man, can be relied upon to do this. As far as we can ascertain, no one has ever made such a preposterous claim, although much ingenuity has been shown in proving such claims to be erroneous. It has been our experience, however, that the antiseptic we use makes a wound aseptic more rapidly than any other method we have seen.

The second question is: Can the antiseptic be applied several days after the wound has been inflicted? It will be noticed with the cases we report that we have been in the habit of applying the antiseptic at any time after the infliction of the wound, even when there is a large quantity of pus. In one case (No. 22) the carbolic was only applied after other methods had been in use for six weeks, beneficial results immediately following. The majority of the cases in which it has been used have not come under treatment until several days after the infliction of the wounds. In no case has any evil effect followed. This is of importance, for Sir Watson Cheyne has stated that in the late stages the use of antiseptics may open the way to a general infection and strongly advises against their use in suppurating wounds. It would appear, however, that his objections are mainly theoretical, for no cases are cited to support his view. Our experience has been to the contrary, for although, as already shown, we have had several cases of spreading infection where other methods were used, this has not once occurred when the carbolic was used.

The third question is: Will not the sloughing caused by the use of so strong an antiseptic be prone to lead to secondary hæmorrhage and injury of nerves? Again we can answer this question by stating that in no single case have we seen such a complication arise, and this not only applies to the cases of compound fracture reported here but to all other cases, now numbering some hundreds, which we have treated by this method. Cases of secondary hæmorrhage have not been uncommon with military wounds, but every case we have seen so far has occurred where other treatment was adopted. The fears that destruction of the tissues may be caused by the antiseptic are, we feel, greatly exaggerated. That a slight amount of tissue on the surface is destroyed is certain, but the amount is insignificant when compared with the original destruction and the ravages of sepsis. In one case (No. 40) there was a large septic wound leading down to the spine with the escape of cerebro-spinal fluid. The carbolic was applied in the usual way, but no ill-effect upon the cord or nerve roots followed.

The fourth question is: Will not the use of the carbolic acid in so high a concentration give rise to carboluria? Sir Watson Cheyne[1] has regarded this as the chief drawback to its use, but has brought forward no evidence that it ever occurs. We believe that it is highly improbable that any absorption will ever take place when the wound is freely drained and the carbolic is not under pressure. This is amply confirmed by our experience, for although careful watch has been kept for the presence of this complication, we have never seen it arise.

Results of the Antiseptic Treatment.

When the results of the treatment of the individual cases are investigated the first important factor to be noted is that no cases have required amputation in the total of 31, and there have been no deaths; a very great difference from the results seen with the control cases. The absence of any amputation is specially remarkable in that 8 of the cases—viz., Nos. 22, 24, 26, 27, 31, 37, 38, and 49—showed conditions in which at first sight it appeared hopeless to attempt to save the limb. In No. 22 there was already spreading sepsis of the arm when the treatment was commenced, and although a very prolonged period elapsed before healing took place, the sepsis rapidly became localised after the application of the antiseptic and the use of a normal hand was preserved. No. 26 showed most extensive sepsis and comminution of the tarsus, so that immediate amputation was considered, but the wound rapidly cleaned and ultimately healed. Case 37 had a knee-joint filled with pus and partly disorganised, a condition which is so often followed by fatal results, but on the application of the antiseptic the toxæmia disappeared and the sepsis became localised in a remarkable manner so that the patient will be left with a useful leg although the knee-joint will, of course, remain ankylosed. All of these cases showed degrees of sepsis and destruction of tissue as marked as any of those in the first group which required amputation.

It so happened that among the cases treated with the carbolic and camphor mixture there were none of clean perforating wounds made with rifle bullets, such as formed nearly 25 per cent. of the cases in the first table. In the later months fewer of these cases have come under our care; possibly they are being treated for the whole of their course in France. In the earlier months we did not treat these cases with the antiseptic which was reserved for the more severe cases. This may explain their absence in this group, the majority of cases of which were grossly infected when the treatment was commenced. The absence of such mild cases makes the results of this antiseptic treatment even more creditable.

It will be seen that in 7 of the cases—viz., Nos. 23, 34, 37, 38, 45, 46, and 49—the drainage was at first inadequate, so that either a large quantity of pus continued to escape or a local abscess formed and further drainage had to be instituted. It is to be noted, however, that in every case the pus was localised. There was no tendency whatever for the appearance of cellulitis, as so often occurred when other methods of treatment were used, and in no case were multiple incisions or incisions at a distance from the wound required.

It will be seen that all the cases were very septic when they arrived in England, whatever the previous method of treatment had been. This was specially so in those cases which had been treated with saline or salt packs, the majority of them having a very foul odour and showing much sloughing.

It is true that the number of bone cases which we have treated by this method is at present small, but even in so small a series the fall in the death-rate from over 10 per cent. to nothing, and in the amputation rate from over 20 per cent. to nothing, is very striking, as is also the absence of all spreading sepsis, and we believe, from our experience of its use with other types of case, that observation of a larger series will give equally good results.

We would advocate the use of carbolic and camphor dressing in all cases of sepsis because we believe that our lists of cases show that:—

It overcomes sepsis more rapidly than other methods.

With its use amputations are much less frequent.

It diminishes pain rather than increases it as is so often the case with other dressings.

The dressing requires to be changed only at long intervals.

Its use is associated with no danger.

The amount of work in the ward is greatly diminished.

It is most suitable to the conditions of modern warfare and can be easily applied to cases that have to travel.

Continued at foot of next column.

THE CEREBRAL ASSOCIATIONS OF RAYNAUD'S DISEASE.[1]

BY HUBERT J. NORMAN, M.B. EDIN., D.P.H.,
CAPTAIN (TEMP.), R.A.M.C., COUNTY OF MIDDLESEX WAR HOSPITAL.

IN a historical summary the author showed that Raynaud[2] became more and more convinced that the explanation of the peripheral symptoms should be sought in some change in the central nervous system. In regard to the symmetrical nature of the disorder he said that there is "une remarquable tendance à la symétrie."[3] The author then continued:—

In enumerating the predisposing causes Raynaud notes that those chiefly affected are persons of a "nervous or lymphatic" temperament; and in the history of the patient he lays stress upon the influence of neuroses, especially hysteria and epilepsy. Several cases which I have had opportunity of observing—among them, three soldiers who have been in active service—and a brief survey of the literature of the subject have served to strengthen the impression of the importance of the nervous element in the production of this disorder. To deal with the condition from all points of view even in a cursory manner would entail much time and energy; it may not, however, be without interest to gather together a group of symptoms illustrating one aspect of Raynaud's disease and to note the cerebral disorders which may be associated with it.

"*Hysterical*" *Symptoms.*

Among Raynaud's cases there are some which exhibited markedly the "hysterical" element (Obs. II. and III.).

In another case (Obs. VIII.), quoted from Landry,[4] that of a woman aged 22, the symptoms were still more marked. With the local asphyxia was such intense pain that the slightest touch produced convulsions. Later in the attack the pains recurred and the convulsions rendered restraint necessary. There was no globus hystericus. The fits, which continued for nearly two months, were not apparently epileptic but hysterical. Nine months later, when she was pregnant and had improved in health, her husband died and she had violent convulsions followed by "délire nerveux" which passed in three days. Another interesting symptom—to be referred to again—at this time was "complete aphonia." At times there was analgesia of almost the whole of the body, without anæsthesia. Later in the attack she attempted suicide by taking laudanum; she became comatose, but rallied and recovered from this. She is stated to have had no recollection of this incident. She improved for a time, but died later of phthisis. Raynaud remarks that "the hysterical convulsions always accompanied the paroxysms of pain in such a way that it is legitimate to place them to the account of the latter ..... in proportion as the malady developed and became established the nervous symptoms became generalised and aggravated, aided by moral emotions of which the influence was undoubted."[9]

Other cases here mentioned were Obs. IX. and XV., Case III. of Raynaud's "New Researches," and a case of Hale White.[10]

The term "hysteria" is generally a rather unsatisfactory one. Frequently it appears that symptoms which do not fall into more definite categories are heaped together under the name of hysteria. Rheumatism and hysteria have more offspring fathered upon them than they can reasonably claim. Raynaud may have been right in calling the seizures in, for instance, Obs. VIII. hysterical; but it is not unreasonable to suggest that they might have been to a considerable extent spasmodic and secondary to the vasomotor condition. Monro appears to be of this opinion in regard to Obs. XV. The "hysterical phenomena," he says, "seem to have been due to the exhaustion and pain caused by the vasomotor disorder in one who had previously been neurotic."[11] It has been said that "hysteria may mimic all other maladies"; but the same writers remark that the greatest danger arises from failing to appreciate the limitations of hysteria and allowing its presence to interrupt careful search for organic disease of which it may be a secondary expression."[12] It is the more necessary to heed this warning in such a condition as Raynaud's disease where there undoubtedly are in certain cases changes in the cerebral circulation. Until, however, we know the etiological factors in hysteria and epilepsy, discussion of details is likely to be barren of results. Nor is knowledge much further advanced when we come to consider the "congestive attacks" and the seizures of general paralysis of the insane, infantile convulsions, or the fits of chronic alcoholics. Are the fits primarily associated with the nerve-cells or are they secondary to changes in the circulatory system? To this we have no satisfactory explanation.

The convulsions of a hysterical nature already mentioned shade almost indefinably into seizures of a more obviously epileptic nature associated with Raynaud's disease. Nor is this surprising when we realise how difficult it is to draw any distinct line between the various forms of convulsions. Nature does not proceed by leaps and bounds. The hiatuses described are blanks in our knowledge rather than definite intervals between one series of facts and another; and, however convenient they may be for purposes of description they are inimical to a proper perception of the uninterrupted processes of nature. So it is difficult to decide where, in the present instance, hysterical phenomena end and those of epilepsy begin.

In Raynaud's Case XIX., that of a female aged 32, in whom were observed local asphyxia and gangrene, there was a history of "epileptiform" attacks; and his justifiable comment is that "les antécédents épileptiques de la malade doivent ici entre en ligne de compte." In this case also there was apparently moral defect, for he tells us that she was arrested in several cases for vagabondage.

Other cases were also summarised here: Southey,[13] Thomas,[14] Osler,[15] Colcott Fox,[16a] Lévi and Raynaud,[16b] and Solis-Cohen.[16c] In a case of Osler he records occasional attacks of "dizziness and transient obscuration of consciousness," paresis and aphasia.

Epilepsy.

Raynaud's disease has been noted in several cases in association with definite epilepsy and with epileptic insanity. Here the local symptoms have been subsequent to more or less prolonged epileptic trouble.

Case XIX. of Raynaud's Thesis, which has already been referred to, would probably fail to be included in this category. In a case of Féré[17] he was unable to obtain a definite history as to which condition preceded the other. The patient also exhibited a curious condition, a disseminated asphyxia over the body. (In a case of symmetrical congestive mottling of the skin reported by Cavafy there were no cerebral symptoms.[18]) Féré concluded that as the epileptic manifestations and the circulatory disorders seemed to have developed about the same time, and as they both showed marked predominance during the winter, it was permissible to establish a relationship between them. If this were so it would, as Féré points out, lend support to the angio-neurotic or sympathetic theory of epilepsy, a theory attributed to Schueevogt and also to Charles Bell.

Bland recorded a case, a man aged 23, who had epileptiform seizures for ten years previously and who at the time he developed symptoms of Raynaud's disease was acutely maniacal.[19] I am able to add to this the case of a man, aged 35, who had had epileptic fits for at least seven years. He had recurring attacks of epileptic furore; he was at these times violent, intractable, and destructive; and, also during the phase of excitement, he was much influenced by auditory hallucinations. During a maniacal phase he developed an inflammatory condition of the forehead suggestive of erysipelas but not definitely so: this descended downwards to the face and passed off in a few days. After it had lasted two days local asphyxia of both feet was noticed, which subsided except from the toes which were gradually becoming more gangrenous when death resulted. The feet had been exposed to cold about this time as the patient tore all his clothing off and would not allow cotton-wool and bandages to remain on his feet.

Other cases are reported by Bernstein[20] and Wigglesworth.[21]

Mania and Melancholia.

Symptoms of Raynaud's disease have also occurred fairly frequently in mania not dependent upon epileptic excitement, in melancholia, and in the depressed phase of maniac-depressive insanity.

In a case of Southey, a boy aged 9, in whom gangrene of the right index finger developed, there were maniacal

Continued from preceding column.

References.—1. Bérard and Lumière: Revue de Chirurgie, December, 1915. 2. Carrel, A.: Bull. de l'Acad. de Méd., lxxiv., No. 40. 3. Sir Watson Cheyne: THE LANCET, 1914, ii., 1185; 1915, i., 419; 1915, ii., 213; Brit. Jour. Surg. 4. Dakin, H. D.: Brit. Med. Jour., 1915, ii., 318. 5. Dalton, F. J. A.: Ibid., 1916, i., 126. 6 Davy, W. B.: THE LANCET, 1916, ii., 475. 7. Donaldson, M., Ailment, E., and Wright, A. J.; Brit. Med. Jour., 1916, ii., 286. 8. Fraser, J.: Ibid., 1915, ii., 525. 9. Gray, H. M. W.: Ibid., 1916, i., 2. 10. Roberts, J. E. H., and Statham, H. S. S., Ibid., 1916, ii., 282. 11. Smith, Lorrain: Ibid., 1915, ii. 12. Taylor, K.; Ibid., 1916, ii., 321. 13. Sir Almroth E. Wright: THE LANCET, 1916, i., 1203; 1916, ii., 503; 1915, i., 873.

symptoms. He was nervous, excited, cried constantly when examined or spoken to; and he was noisy especially in the evenings.[22] Barlow says that Southey informed him that "since the publication of this case he had seen several examples of Raynaud's disease in asylum cases": the type of case is not specified.[23]

Edgerley gives a case of a woman with Raynaud's disease during maniacal attacks. (The same author records a case which may be compared with Féré's. A woman, aged 37, who had had three previous attacks, developed ecchymoses over her body and limbs at the height of the excited period. Such a case, though not one which Raynaud would have included in his category, is interesting from the point of analogy. It might be more properly associated with the cases of "stigmata" upon which much stress is laid by many of the devout, more especially as she had delusions that she was being crucified and stoned[24].) Macpherson also relates a case[25] with acute mania.

In maniac-depressive insanity the symptoms of Raynaud's disease may appear either during the maniacal or during the depressed phase. Esquirol,[26] among others, has called attention to the alteration in the peripheral circulation which occurs so frequently among the insane.

Ritti remarks that he never observed them during the maniacal phase.[27] In contra-distinction to this I have observed a case of maniac-depressive insanity where the symptoms of Raynaud's disease appeared after about three weeks of intense excitement. In another case there was a history of two previous attacks of mania but no record of any pronounced periods of depression. She remained acutely maniacal for two months after admission. Her left forearm and hand were first affected with swelling and then discolouration; this disappeared, and then the right leg and foot were attacked. Next the left lower limb and side up to the axilla were affected. Later symptoms of gangrene appeared in the feet.

Urquhart recorded a case of Raynaud's disease in association with melancholia.[28] In a case reported by Shaw there were melancholic symptoms, delusions of poisoning, and suicidal tendencies.[29] Targowla also records a case.[30]

Another of Urquhart's cases exhibited symptoms more suggestive of dementia præcox.[31] I have observed a case of dementia præcox with marked negativism, restlessness, apathy, and progressive mental feeblement, who developed local asphyxia in both feet with patches of desquamation. He was then 25 years of age, and his mental symptoms had lasted for several years. Another case, a female aged 23, was stated to have begun to show mental symptoms at 21. She gradually became mentally enfeebled: she was confused, unable to converse, and childish. She was at times excited, restless, violent: occasionally thought that she was going to be burnt. She developed recurring local asphyxia of both feet.

The following cases I have had the opportunity of observing at the County of Middlesex War Hospital among soldiers who have been on active service.

Private A B, aged 19, went to France in April, 1915, and was in the trenches and under fire. In October was in hospital with "bad circulation." It was reported that on parade he did not appear to understand the orders given and sometimes wandered from the ranks. He complained that things were stolen from him. He rambled about at night and was much influenced by auditory hallucinations. He was depressed and wept. He was deluded, and said that "chloride of lime was being sprinkled over blood in the next room." He was dull, stupid, and confused; cerebration slow; memory defective. He had typical recurring attacks of local syncope and local asphyxia in the fingers and toes. He improved steadily and became bright and cheerful. After the mental improvement had become pronounced the circulatory troubles still continued and later he had an attack of aphasia to which reference will again be made.

Private C D, aged 21, went to France in January, 1916. He was in the trenches for five days; heavily shelled, but not struck or buried. On the last day in the trenches his officer was shot beside him. He was much shaken and later not able to recall events about this time very accurately. He was sent into hospital. He was at that time nervous, emotional, and depressed. He stated that when alone he felt as though someone were following him. He did not hear voices, but he felt as if "things were put into his mind." He said that on the day before admission to hospital in France he felt that he wanted to jump into the water. On return to England he was brighter, but still nervous and rather tremulous. The noises in his head he compared to the ringing of bells. For some time he had suffered from headaches; at nights he had "visions which were not quite dreams."

He had local syncope and local asphyxia of the first and second fingers of both hands, and these symptoms recurred from time to time. He had noticed this condition for years. He believed that it came on after he had acute rheumatism and chorea. He said his mother suffered from a similar condition. Vision impaired; had observed a progressive weakening of his sight for some years; right pupil slightly larger than left.

This patient gave an extensive family history of nervous instability and of a tendency to vascular degeneration. On paternal side: Great-grandfather had hemiplegia; grandfather very excitable, became "mad if he took drink," eventually had a seizure and died; grandmother suffered from violent headaches, was of a very nervous temperament, marked hypochondriacal; a cousin is mentally deficient. His mother is nervous and hysterical. His brother is very excitable, and at times becomes confused and forgetful. This patient himself is sallow-complexioned and nervous. He says that he was troubled by "voices" when he was about 17 years old; and that about the same time he attempted suicide. He says that he was subject to convulsions as a baby.

Private E F, aged 40, exhibited a local condition approximating to Raynaud's disease, but which might be more accurately described in the category of acro-asphyxia. Both hands were from time to time cold and almost syncopal; in the succeeding asphyxial state they looked as if they had been dipped in a solution of indigo. He had had 15 years' service. In 1905 the left testicle was removed for "tumour." Just after this he had a "fit," and another a year later; During these fits he lost consciousness. In 1908, while in India, he had malaria; after this he first noticed the change in his hands. In May, 1915, he was buried by a shell explosion in France. He had a similar experience in September; history of gas-poisoning about the same time. In November he went to Salonica, where whilst walking with a friend he fell down suddenly and was unconscious for about 24 hours. He was sent back to England; on return was depressed, nervous, and tremulous; at times incoherent in speech. Twice he attempted suicide in what is described as "an ostentatious manner"; and is reported to have had some fits of an hysterical nature. Since I have seen him there have been no further fits or attempts at suicide. He has, however, been depressed and plaintive. He complained very much about his digestion and said that he had been unable to retain any food; but this was not noticed after his admission. Gradual improvement mentally and physically, but at the time of writing there is apparently some mental reduction and he is facile and more satisfied with his capabilities than his state warrants.

Mental Enfeeblement.

In certain cases the symptoms of Raynaud's disease in insane patients have been noted after mental enfeeblement had become pronounced; although it does not occur in demented cases to the extent that one might, *a priori*, imagine when the sluggishness of the circulation in such patients is considered. There is apparently some other factor; it may be the involvement of certain parts of the nervous system.

Cases given illustrative of this were those recorded by Iscovesco,[32] Hutchinson,[33] Zambaco,[34] Barlow,[34a] Ibotson,[35] Case XVI. of Thesis,[36] and Pitres and Vaillard.[36a]

Aphasia.

The occurrence of aphasia in connexion with Raynaud's disease is rare.

He drew attention to it in his eighth case to which reference has already been made. From time to time there was complete loss of speech without inflammation, laryngeal pain, cough, or expectoration. He noted that no other nervous symptoms accompanied this loss of speech, and he appears to have thought it a part of the hysterical condition.[37]

One of the most interesting cases with this symptom is recorded by Weiss.[38] Other cases here given were: Osler,[39] Stockman,[40] and Simpson.[41]

In the case of Private A B, already related, aphasia occurred after the symptoms of depression, delusions, and auditory hallucinations had passed.

He was a bright, intelligent youth, and did not seem in the least hysterical. The aphasic state began on the Saturday morning. He said he was trying to say something and could not. He had "felt a bit strange in the morning but could speak." The day before it seemed to him "as if things were muddled up. He felt limp and as if he was going to be ill." He could understand what was being said to him, but could not reply. He played the piano during the aphasic period; no hemiplegic symptoms. Speech returned suddenly Wednesday night. He said "he sat up in bed and spoke," and he continued able to speak thereafter. The muscles of his throat felt stiff and painful, due, he thought, to efforts he made to speak.

The association of aphasia with Raynaud's disease is an interesting and rare one. To look upon it as a hysterical aphonia is unsatisfactory. We do not know what hysteria is in spite of elegant explanations, and to explain one incomprehensibility by another advances knowledge little. The explanation given by Weiss seems plausible; he thought that the aphasia was due to a "spastic ischæmia in the region of the third left frontal convolution." A similar condition in other regions of the brain might account for other symptoms. Simpson suggested the varying symptoms in his case could "only be accounted for by corresponding attacks of cerebral anæmia or congestion affecting different areas of the brain." "They are," he adds, "compatible with no single lesion." A case recently recorded of injury in the neck which necessitated ligature of the common carotid artery in the left side is interesting in this connexion.*

Ocular Symptoms.

In his later researches Raynaud paid much attention to the ocular symptoms.

In one case, during the period of asphyxia, the man could see quite well, but as the digits were recovering their normal colour, the sight, especially of the left eye, became dim. Vision was restored at the moment when a new attack of asphyxia supervened. Ophthalmoscopic examination when discolouration of extremities was at a minimum revealed narrowing of the arteries and pulsation of the veins. During the period of cyanosis the arteries did not regain their normal calibre as might have been expected and the venous pulsations persisted.

The second case, a young man aged 22, was admitted for boulimia and polydipsia, and had cyanosis of hands and face; "at the same moment when a paroxysm commenced he experienced a notable obscuration of sight, but when the cyanosis passed off vision was restored." There was narrowing of the arteries during the cyanotic period, with restoration of calibre when reaction set in. The retinal veins were not observed to pulsate.[42]

Ocular symptoms were also noted in cases of Bland, Morgan,[43] Stevenson,[44] Hutchinson, Simpson, Calmette,[45] and Solis-Cohen.[46]

Private C D, whose case has already been referred to, noticed that, in association with the local syncope and local asphyxia, there was increased dimness of vision, particularly in the right eye.

Headache.

Headache is a not infrequent concomitant.

It has already been referred to in cases quoted from Osler and Simpson (where it was left-sided). Wood speaks of a case.[46] In the case of Private C D there were troublesome generalised headaches. Solis-Cohen noticed in one of his cases of acro-asphyxia that there was, associated with visual trouble, intense headache lasting about ten minutes, and in another constant headache for three or four months. In a case of Vulpian there was occipital headache.

Paretic (Hemiplegic) Symptoms.

These have been noted in several cases.

In Raynaud's third case (Thesis) there was apparent paresis of the right arm. In Case III. of the "New Researches" there was hemiplegia of the left side lasting for two hours. In Simpson's case, associated with the aphasia, there was left-sided hemiplegia; a similar condition was recorded by Stockman. Osler noted at one time affection of the right side with aphasia; on the second occasion, of the right hand again with aphasia; thirdly, of the left side but without aphasia; and at the fourth attack right hemiplegia again associated with aphasia. In the case recorded by Weiss there was diminution of motor power.

Raynaud believed that the motor symptoms were due to defect in afferent impulses rather than to muscular weakness. With the hemiplegic symptoms one may associate the condition of intermittent limp, where the patient "after a few steps becomes unable to walk farther owing to intolerable pain in the muscles of the leg."[47]

Erythromelalgia and Raynaud's Disease.

There is at times some confusion in regard to the two conditions. In the two cases with which Weir Mitchell[48] illustrates and contrasts these conditions there were noticeable nervous symptoms. Although there is dissimilarity in the symptoms, there may be some relationship in pathological bases. Weir Mitchell at first inclined to the view that erythromelalgia was due to "some form of spinal disorder"; later he considered peripheral neuritis as a possible cause. In Wiglesworth's case of Raynaud's disease there was neuritis in all four limbs; while Pitres and Vaillard held that most of Raynaud's cases of gangrene were caused by peripheral neuritis. Bramann recorded some interesting cases which were possibly related to both Raynaud's disease and to erythromelalgia.[49] Bramann considered that the symptoms pointed not to vascular but to spinal disease.

Conclusion.

The time has not yet arrived when it is possible to say what is the exact condition in the nervous or vascular systems which gives rise to the varied symptoms of Raynaud's disease, so it is not surprising that various theories have been promulgated. Some of the suggestions are rather of the nature of explaining one symptom by another. For example, when the localised headache in a case of Raynaud's disease is said to be due to "localised meningeal congestions," one is still left to discover the cause of these congestions. Raynaud inclined to the view of the central nervous origin of the symptoms.

The marked symmetry of the lesions (he wrote) ought to suggest that they originate in a discharge either spontaneous or reflex, starting from the cord and radiating thence to the vascular nerves of the extremities.[50]

Barlow sums up as follows:—

The last development of Raynaud's doctrine ..... is that there is a peripheral excitation, most commonly consisting in an impression produced by change of temperature in the cutaneous nerves, and that whilst in a normal state either very low temperature or exposure for a long period are necessary for the production of more or less analogous effects, in these individuals an insignificant difference is sufficient; further, that the peripheral stimulus affects that part of the grey matter of the cord which presides over the vaso-motor innervation and that a great exaggeration of the irritability of that part of the cord must be assumed. ..... Now given the initial slight peripheral stimulus there seems no reason why the central disturbance should not radiate and become manifest in several different regions successively instead of simultaneously.[51]

Monro, whose admirable monograph on this condition has rendered all students of it his debtors, thinks that—

"The phenomena of Raynaud's disease must be brought about through the agency of the nervous system." As to the particular part involved, he says: "Accepting then the theory of an increased excitability of the vaso-motor centres in the cerebro-spinal axis, allusion must be made to the situation of the unduly sensitive centres. Raynaud is undoubtedly correct in saying that the part of the cord varies in different cases." The varied distribution and the occasional unilateral character of the symptoms suggest that the disturbance is in the subordinate vaso-motor centres of the cerebro-spinal axis. This is doubtless specially true of cases that originate in consequence of severe exposure. On the other hand, cases that are due to emotion have their source in cortical disturbances, and these will, no doubt, operate through the principal centre in the medulla. If a subordinate centre in a given limited area has once been rendered over-excitable through exposure or otherwise, cortical discharges, such as those connected with emotion, may at any time call forth paroxysmal over-action limited to the over-sensitive region. The theory of a cortical starting-point for the vaso-motor discharge is favoured by the frequent association with such functional disorders of the cortex as insanity, epilepsy, &c.[52]

Purves Stewart suggests that "profound molecular changes exist ..... in the sympathetic system."[53] Lévi and Raymond lay stress upon the emotional factor. They think that the vaso-motor phenomena in Raynaud's disease and in erythromelalgia have their origin in certain emotions which give rise to subconscious fixed ideas. Among their general conclusions are the following:—

1. There is a form of Raynaud's disease which is purely hysterical. It may originate or reappear under the influence of a moral emotion or shock; it may disappear or be improved by hypnotism, but there remains a vaso-motor system easily affected. 2. Acute rheumatism is frequently found in the antecedents of patients, and may determine the localisation of hysterical manifestations. 3. The onset is sudden, the origin emotional. The disease is psychical. 4. The central theory must be accepted—that is, of a neurosis with localisation in the cerebro-spinal centres.[54]

* Madden, F. C., A Case of Marked Temporary Aphasia after Ligature of Common Carotid Artery for Traumatic Aneurysm. Brit. Med. Jour., 1916, i., 585.

Those who incline to the so-called "psychic" agency in the production of such symptoms as are seen in Raynaud's disease would do well to remember that he looked upon those differing symptoms as degrees in one condition. So with the exciting factors, it is a question of the strength of the stimulus; but there is at the same time the response of the organism. Where the instability of the nervous system is so marked that it responds to minimal stimuli the tendency is among certain people to place the results in a category which is marked off from all others. Thereafter it is only a question of personal predilection as to whether they are labelled psychic, spiritualistic, or miraculous; or by those who, admitting in their very phraseology their incompetence to see, designate the facts as hidden or "occult," and then quarrel with anyone who endeavours to illuminate the dark places—and they are many—of their scheme of things.

Emotion as, at least, an exciting factor has been frequently noted.

Noyes records a case, a woman of nervous temperament, in whom attacks were produced by cold and emotion. "Three or four separate attacks have been observed to occur in rapid succession whilst the patient was under examination ..... owing to emotional excitation."[55] In Stockman's case, "cold, mental excitement, worry and slight traumatism" brought on the attacks.[56] Colcott Fox notes regarding his case that "the extremities were affected in a second if she was startled by a sudden knock at her door or any unusual occurrence."[57] Solis-Cohen thinks that in certain individuals there is a congenital want of balance in the circulatory apparatus. "Mental or even physical shock in a subject of congenital vaso-motor ataxia might cause the sudden development of exophthalmic goitre; and an exposure to cold from which a normal individual would quickly react may cause local asphyxia, chilblains, frost-bite, or even gangrene."[58]

In certain cases the cerebral symptoms are apparently secondary to the vaso-motor changes. The etiology of maniac-depressive insanity is obscure, and the possibility of periodic vascular changes cannot be lost sight of. Ritti was strongly of this opinion. He thought it allowable to surmise that a similar condition might be taking place in the brain; that there is spasm of the cerebral capillaries; that the depression may only be the result of cerebral anæmia consecutive to this spasmodic contraction; and that finally the mania is due to re-establishment of the cerebral circulation, which in the phase of reaction may even be exaggerated.[59] This was the opinion of Luys, who, speaking of this form of insanity, said that the phenomena of alternating depression and excitement succeed one another by imperceptible degrees; this is brought about by "la fatalité des lois de la circulation capillaire." According to him, excitement and depression are only "des variations dynamiques apparentes de l'état d'ischémie ou d'hyperhémie successives par lesquelles passe la trame nerveuse intéressée."[60] It is probable, however, that the explanation is not quite so simple as this, and other additional factors will doubtless be found to underlie these changes. Nevertheless, the mental symptoms which have been observed in association with Raynaud's disease may eventually help to elucidate the subject of the causation of mental disorder.

In other cases the symptoms of Raynaud's disease have been subsequent to long-continued mental disorder. Edgerley remarks: "While in certain cases disorder of the circulatory system is a cause of insanity, much more often mental disorder produces circulatory disorder."[61] It seems probable from a survey of certain of the cases already mentioned that the spread of disorder in the cerebral cells gradually involved those areas of the nervous system which preside over the vaso-motor and other mechanisms. Cases of general paralysis of the insane frequently provide a dramatic illustration to the gradual spread from one area to another of the nervous system; and one may readily agree with Urquhart when he remarks of the cases described by him that they may be "correlated with cases of general paralysis where intractable bedsores occur in similar symmetrical disposition."

It is not possible, however, to come to any decision on the matter at the present time. The mechanism of cerebral processes has yet to so great an extent to be discovered that the relative value of various factors, physiological or pathological, in bringing about disorder in the human economy cannot be decided. We do know that gross interference with the cerebral circulation can bring about rapid changes in brain function. Pressure in the common carotid arteries, such as is practised by Japanese wrestlers, speedily produces unconsciousness; and Lauder Brunton gives an example of how the same result used to be brought about before the introduction of chloroform as an anæsthetic by means of raising a person rapidly from the recumbent to the standing position.[62] In these cases there is produced almost instantaneously the condition to which all insanity tends—abolition of cerebral function. If in such a condition as Raynaud's disease there is a more localised interference with cerebral circulation, it is legitimate to infer that function may be inhibited *pari passu* with the vascular involvement. A further inference would be that cerebral disorder involving those areas whose function is more specifically described as mental may arise from the vaso-motor changes. On the other hand, it is necessary to remember that the cerebral and the vascular changes may be dependent on other factors, such as a toxæmia or a deficiency in glandular secretions. Nothing but a patient study of all the factors involved is likely to lead to that stage at which it will be allowable to pass from hypothesis to explanation; it must suffice us for the most part to endeavour to gather the materials wherewith others shall build.

Bibliography.—1. De l'Asphyxie Locale et de la Gangrène Symétrique des Extrémités (Thèse pour le Doctorat en Médecine), par A. G. Maurice Raynaud (Paris, 1862). 2. New Researches on the Nature and Treatment of Local Asphyxia of the Extremities, by Maurice Raynaud (Selected Monographs—New Sydenham Society), London, 1888, p. 182. 3. Paris Thesis, p. 18. 4. Zambaco: De la Gangrène Spontanée produite par Perturbation Nerveuse (Paris, 1857). 5. Racle: Mémoire sur de Nouveaux Caractères de la Gangrène, &c., Gaz. Méd. de Paris, p. 985, Dec., 1849. (This reference is stated wrongly in Raynaud's Thesis as 1859: an error repeated in Barlow's translation in "Selected Monographs," p. 9.) 6. Paris Thesis, p. 19. 7. Gaz. Méd. de Paris, July, 1849, p. 544. 7a. Raynaud's Disease, by T. K. Monro, Glasgow, 1889, p. 18. 8. Recherches sur les Causes et les Indications Curatives des Maladies Nerveuses, O. Landry (Paris, 1855). 9. Selected Monographs, p. 52. 10. Guy's Hosp. Gaz., 1844, pp. 121, 143. Clin. Jour., 1894, iii., 369–75. 11. Monro: Op. cit., p 153. 12. Nervous and Mental Diseases, by Church and Peterson, p. 586 (London, 1901). 13. Brit. Med. Jour., 1882, ii., 1155. 14. Case of Raynaud's Disease associated with Convulsions and Hæmoglobinuria, H. M. Thomas, Johns Hopkins Hosp. Reports, 1890–91, ii., 114–18. (Report of case continued by Osler, Amer. Jour. Med. Sc., New Ser., 1896, cxii., 522.) 15. Cerebral Complications of Raynaud's Disease, Osler, Amer. Jour. of Med. Sc., 1896, New Ser., cxii., 529. 16. Barlow: Trans. Clin. Soc., 1885, xviii., 311. 16a. Fox, T. Colcott: On Two Cases of Raynaud's Disease, Ibid., p. 300. 16b. Lévi, L., and Raymond: Arch. de Neurologie, No. 95; J. of Ment. Sci., xlii., 193 (Jan., 1896). 16c. Solis-Cohen, S.: Vasomotor Ataxia, a Contribution to the Subject of Idiosyncrasies, Amer. Jour. Med. Sc., 1894, cvii., 132–34. 17. Féré, Ch.: Note sur l'Asphyxie Locale des Extrémités chez les Épileptiques, Nouvelle Iconographie de la Salpétrière, 1891, iv., 354. 18. Cavafy, G.: Symmetrical Congestive Mottling of the Skin, Trans. Clin. Soc., 1883, xvi., 43. 19. Bland: THE LANCET, 1889, ii., 838. 20. Bernstein: London Med. Record, 1885, xiii., 337. 21. Wiglesworth: Peripheral Neuritis in Raynaud's Disease, Trans Path. Soc. Lond., 1887, xxxviii., 61. 22. Southey: Case of Local Asphyxia, Symmetrical Gangrene, Trans. Clin. Soc., 1888, xvi., 167. 23. Selected Monographs, p. 193. 24 Edgerley, S.: Certain Conditions of the Circulatory System in the Insane, Jour. of Ment. Sc., July, 1896, xlii., 504 et seq. 25. Macpherson, J.: Case of Acute Mania with Symmetrical Gangrene of the Toes, Ibid., 1889, xxxv., 61. 26. Esquirol: Des Maladies Mentales, i., 201–03. 27. Ritti, Out: De l'Asphyxie Locale des Extrémités dans la Période de Dépression de la Folie à Double Forme (Ann. Méd. Psychol., Paris, 1882, 6th Series, viii.); Traité Clinique de la Folie à Double Forme, Paris, 1883, p. 106 et seq. 28. Urquhart, A. R.: Two Cases of Raynaud's Disease, Edin. Med. Jour., 1896, xl. (ii.), 806–13. 29. Shaw: Raynaud's Disease, New York Med. Journal, 1886, xliv., 676–79. 30. Targowla: Un Cas d'Asphyxie Locale Symétrique Intermittente des Extrémités chez un Lypémaniaque, Ann. Méd.-Psychol., 1892, xv., 400–03. 31. Urquhart: Loc. cit. 32. Iscovesco: Asphyxie Locale des Extremités, C. R. Hebdom. des Séances et Mémoires de la Soc. de Biol., 1894, i., 289. 33. Hutchinson, J.: Arch. of Surgery, 1894, v., 220. 34. Zambaco: Op. cit., Selected Monographs, p. 8. 34a. Barlow: Ibid., p. 193. 35. Ibotson, E. C. B., Raynaud's Disease in a Phthisical Dement, Guy's Hosp. Gaz., 1889., xii. (New Ser.), 253. 36. Raynaud: Thesis, p. 97. 36a. Pitres et Vaillard: Arch. de Physiol. Norm. et Path., 1885, p. 106, Selected Monographs, pp. 196–197. 37. Raynaud: Thesis, pp. 58–66. 38. Weiss: Wiener Klinik, 1882. Monro, op. cit., p. 156. 39. Osler: Loc. cit., p. 524. 40. Stockman, R.: Edin. Med. Jour., 1903, xiv., 252. 41. Simpson, J. C.: Remarks on Raynaud's Disease, with cases, Edin. Med. Jour., 1892–93, xxxviii., 1030. 42. Monro: Op. cit., p. 159–60. Raynaud: New Researches, &c. Selected Monographs, pp. 158–67. 43. Monro: Op. cit., p. 160. 44. Stevenson, L. E.: Case of Raynaud's Disease, THE LANCET, 1890, ii., 917; Monro: Op. cit., p. 161. 45. Calmette: Recueil de Mémoires de Médecine, 1877, xxxiii., 24; Monro, p. 151. 46. Wood, H. C.: Trans. Coll. of Physicians, Philadelphia, 1892, xiv., 166. 47. Stewart, Purves: The Diagnosis of Nervous Diseases, 1906, p. 156. 48. Weir Mitchell, S.: Clinical Lessons on Nervous Diseases, 1897, 180–84. 49. Monro: Op. cit., p. 157. 50. Selected Monographs, p. 155. 51. Barlow: Trans. Clin. Soc., xvi., 186 (1883). 52. Monro: Op. cit., pp. 188, 196. 53. Stewart: Op. cit., p. 43 (note). 54. Lévi and Raymond: Arch. de Neurol., No. 95; J. of Ment. Science, xlii., p. 193 (Jan., 1896). 55. Noyes, A. W. F.: Raynaud's Disease, Austral. Med. Jour., 1893, xv., 265–69. 56. Stockman: Loc. cit. 57. Fox: Loc. cit. 58. Solis-Cohen: Amer. Jour. of Med. Sc., cvii., 144 (1894). 59. Ritti: Ann. Méd. Psychol., 6th Series, viii., 36–49 (Paris, 1882). 60. Traité Clinique et Pratique des Maladies Mentales, p. 515. 61. Edgerley: Loc. cit. 62. Brunton: The Action of Medicines, p. 172.

A NOTE ON THE TREATMENT OF LAMBLIA INFECTIONS.

BY CLIFFORD DOBELL, M.A.,
LECTURER IN PROTISTOLOGY, IMPERIAL COLLEGE OF SCIENCE;
AND
GEORGE C. LOW, M.A. ST. AND., M.D. EDIN.,
ASSISTANT PHYSICIAN AND LECTURER, LONDON SCHOOL OF TROPICAL MEDICINE.

MANY drugs have been tried in the treatment of *Lamblia intestinalis* infections, and cures have from time to time been reported. How far these may be looked upon as real is, however, doubtful, because no exact details have usually been given as to the number of examinations of the fæces made after treatment, nor as to the length of time during which these examinations have been conducted. It is a fact familiar to all who have examined the fæces of persons infected with lamblia that the parasites are not always discoverable in the stools. A case which is "positive" one day may be "negative" the next, no cysts or free flagellates being found after the most careful search. It is therefore of the greatest importance to ascertain the frequency of the occurrence of such "negative" days in untreated cases if any conclusions are to be drawn from findings in the fæces as to the effects produced by any particular treatment. When after the administration of some drug no lamblia can be found for a few days, it is clearly inadmissible to attribute the absence of parasites to the action of the drug if a similar temporary disappearance may be observed without any treatment whatsoever.

In the belief that a few cases thoroughly studied are more informative than a large number studied imperfectly, we offer the following detailed observations which we have made upon a single case infected with *Lamblia intestinalis*. The case studied is a perfectly healthy man who has been infected with lamblia for some years without suffering the slightest ailment which could be attributed to the flagellate. Before any treatment was attempted the stools of this person were subjected to daily examinations by one of us (C. D.) for a period of 100 consecutive days in order to ascertain the frequency of the occurrence of negative examinations in normal circumstances. The number of cysts passed in the fæces on different days varied greatly, and on many days the most careful search failed to reveal even a single cyst. As a general rule no stool was pronounced "negative" until two cover-glass preparations (7/8 in. sq.) had been systematically searched. On several occasions, however, more than two preparations (up to 11) were examined. The results of this series of examinations, recorded simply as positive and negative without reference to the number of cysts present on positive days, are given in the following table:—

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Examinations	−	+	+	+	−	+	+	−	+	+	+	−	−	−	−	+	+	−	−	−
Days	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Examinations	−	−	−	−	+	−	+	+	−	+	+	+	+	+	+	+	−	+	−	−
Days	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Examinations	−	−	−	+	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−
Days	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Examinations	+	+	+	+	−	−	−	−	+	+	−	+	−	−	−	−	−	−	+	+
Days	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Examinations	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	+	+	+	−

If the above table be examined it will be seen that the distribution of positive and negative findings is extremely capricious. No definite periodicity in the output of cysts is observable. The most noteworthy feature in the record, however, is the large proportion of negative findings—altogether 62 negative examinations and only 38 positive having been made. It will also be noted that fairly long sequences of negative examinations occurred. The longest was from the fifty-first to the sixtieth day (10 days), whilst somewhat shorter periods, from the eighty-seventh to the ninety-fifth day (9 days) and from the eighteenth to the twenty-fourth (7 days) were also found. It is thus clear that with this case any number of consecutive daily negative examinations between 1 and 10 would be devoid of significance as evidence of removal of the flagellates in any treatment which might be attempted. After this point had been determined we began a series of trial experiments with drugs for which success has been claimed. Examinations of the stools were made daily throughout.

Woodcock and Penfold[1] record a series of lamblia cases treated with various drugs, and claim that they completely cured one of them by the administration of beta-naphthol together with bismuth salicylate. One of us (G. C. L.) has already criticised[2] these results and pointed out that further examinations were essential, especially after the administration of saline purges. These drugs were the first tried on the case here described.

Bismuth salicylate gr. 20 and beta-naphthol gr. 15, made up in cachets, were given three times a day after food, the administration being continued for six days. During treatment the cysts disappeared from the stools. None could be found for nine days (three days during and six after treatment). On the seventh day, however, after treatment they were again found in the stool and persisted in considerable numbers for the next week. When the 9 days negative period which occurred at the time of treatment is compared with the 7 days, 9 days, and 10 days periods of negative examinations which occurred previously without treatment, it appears probable that it is without significance as an indication that any effect was produced by the drugs administered.

As this treatment was therefore quite unsuccessful a second trial was begun after eight consecutive daily positive examinations had been registered. The second treatment was with methylene-blue, as recommended for flagellate infections generally by Castellani.[3] Three grains of the drug were administered thrice daily after food. The treatment was continued for two days, after which it had to be abandoned owing to the appearance of toxic symptoms. These symptoms were as follows. After three doses there was a gradually increasing sensation of discomfort in the abdomen, eventually localised as a definite bladder irritation. The patient had to rise twice during the first night to pass water, and in doing so experienced a smarting sensation in the urethra. On the second day, however, the drug was again taken in full doses, micturition then becoming painful and the vesical irritation more pronounced. Frequent passing of urine temporarily relieved the abdominal discomfort. During the second night the symptoms became so unpleasantly accentuated that the treatment was discontinued. The total amount of the drug taken was 18 grains in the two days. On the cessation of treatment the symptoms rapidly disappeared. Dr. A. J. Ewins kindly tested the sample of methylene-blue employed for the possible presence of zinc, but with negative result. It is thus clear that this dye, even when quite free from zinc, may give rise to toxic symptoms. A similar result was obtained by one of us (G. C. L.) in a case previously described,[4] and Dr. N. Barlow in America has recently recorded comparable experiences.[5] It may be concluded, therefore, that methylene-blue in such doses may be dangerous, and should be employed with caution. The drug appears to have had no effect whatsoever on the lamblia. The cysts were equally numerous in the fæces before, during, and for 13 days after treatment. If it had killed the parasites one would have expected to find a certain number of dead and stained organisms in the fæces at the time of treatment; although these were searched for with great care none were seen.

The third treatment tried was with turpentine, well spoken of by French authors. Ten minims in gelatin capsules were administered three times a day for five days, this being followed by guaiacol carbonate 5 gr. thrice daily for three days. Every day during treatment and for 19 consecutive days afterwards the stools were examined and large numbers of cysts found on every occasion. It may be concluded therefore that these two drugs were wholly ineffectual in removing the lamblia.

Woodcock and Penfold believe that they were able to cure two cases of lamblia infection by this method of treatment, but their belief appears to us to rest upon a very slight

[1] Brit. Med. Jour., March 18th, 1916.
[2] Ibid., March 25th, 1916.
[3] Ibid., Nov. 27th, 1915.
[4] Jour. Trop. Med. and Hyg., Feb. 1st, 1916.
[5] New Orleans Med. and Surg. Journ., October, 1916, lxix., No. 4.

foundation. Their cases were each examined only twice after treatment. One was negative on both occasions, the other once positive and once negative. We believe that so few negative examinations are without significance, and therefore do not warrant the conclusion drawn by the authors.

We have not as yet tried any other method of treatment upon the case here described, for the reason that none would appear to hold out any hope of success. All the five drugs here employed (bismuth salicylate, beta-naphthol, methylene blue, turpentine, and guaiacol carbonate) appear to be without action upon lamblia. We have, one or both of us, examined other cases treated with various other drugs, all of which have been equally useless, and therefore appear unworthy of further trial. These include emetine hydrochloride (hypodermically), emetine bismuth iodide, bismuth subnitrate, thymol, salol, kerol, cyllin, and liquid paraffin. It appears to us probable that no method of treatment has yet been found which will get rid of a lamblia infection. The only effect which could possibly be ascribed to the treatment in the present case is one which is hardly desirable. During and after the treated period the number of cysts in the fæces increased enormously; for, whereas during the untreated period lamblia cysts could be found only 38 times in 100 examinations, and then usually in small numbers only, yet during and after treatment for a period of over 50 days cysts were present every day in large quantities.

Note on the Blood in Lamblia Infections.

So far as we are aware, no exact blood counts and blood examinations made in lamblia infections have as yet been published. In order that these may be of any value mixed infections must, of course, be excluded. In this respect we have been fortunate, as our case is not infected with any other protozoon, and he has never suffered from dysentery, malaria, persistent diarrhœa, bowel troubles, or debility, and is at the present moment in perfect health.

A total enumeration of the corpuscles and a differential count of the leucocytes show that both of these do not vary in any respect from the normal. The following are the figures:—

Red corpuscles	4,860,000
White corpuscles	7,200
Hæmoglobin	100 per cent.

Differential Count.

	No. counted.	Per cent.	No. per c.mm.
Polymorphonuclear	658	65·8	4737·6
Large mononuclear	27	2·7	194·4
Lymphocytes	281	28·1	2023·2
Eosinophile	26	2·6	187·2
Transitional	5	0·5	36·0
Mast cells	3	0·3	21·6
	1000	100·0	7200·0

The red corpuscles were normal in size and shape. One might have expected some increase in the number of large mononuclear leucocytes, such as occurs in other protozoal infections (malaria, trypanosomiasis). The statement has, indeed, been made that in lamblia infections there is an increase in the number of lymphocytes and large mononuclears. The present case affords no confirmation of this view. Moreover, it seems probable that the presence of protozoa in the intestine gives rise to no recognisable change in the cellular constitution of the blood. The present case confirms this supposition, as does an earlier observation of one of us (G. C. L.) on a case of pure infection with *Entamœba histolytica*.[6] A blood count, therefore, would seem to be of no value as a means of determining whether a person is, or is not, infected with intestinal protozoa.

We do not, of course, wish to draw any far-reaching conclusions from the single case here described; but as it presents certain features of interest and supplies definite information upon certain points, we think the few foregoing observations worthy of record.

[6] Jour. Trop. Med. and Hyg., Feb. 1st, 1916.

LIVINGSTONE COLLEGE.—This institution during the past 22 years has trained a succession of students for medical missionary work. It is now a hospital for wounded soldiers, and the last report shows that during the past 14 months 850 patients have been treated, with an average attendance of nearly 23 days each. Dr. L. E. Wigram, the principal of the College, is now the honorary resident medical officer.

THE FULMINATING TYPE OF CEREBRO-SPINAL FEVER: PATHOLOGY AND CAUSE OF DEATH.

BY P. W. MACLAGAN, M.B., CH.B. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS;
AND
W. E. COOKE, M.D. LIVERP., M.R.C.P. EDIN., D.P.H.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

CASES belonging to this type form one of the most distressing features of this disease. An apparently healthy person is suddenly attacked and dies within 48 hours from the onset of his illness. In our series of cases of cerebro-spinal fever during the epidemic of 1914–16 we have noted a considerable number which may be classified under this heading. We have notes including post-mortem records of 10 or 12 of these cases, and in addition clinical notes of several more which have belonged to this type. All terminate fatally, and pathologically differ from the ordinary type of this disease in one essential feature, and it is principally to this that we wish to draw attention.

1. It has been recognised for some time that cases of intense meningococcal bacteriæmia without any meningeal involvement may occur. While these cases are rare it is not so uncommon to find others very similar in which the meningeal infection is very slight, and which apparently succumb to the general infection before the lesions of the meninges have time to develop fully. Our notes on one of these cases will sufficiently describe this class.

The patient, aged 21, suddenly became ill in the evening of April 9th, 1916, with headache, shivering, and vomiting. On admission to hospital on the 10th he looked ill. The face was pale and slightly cyanosed. He complained of slight headache and pain in ankles. Slight resistance on antero-posterior flexion of neck. Kernig's sign just present. Knee-jerks and abdominal reflex absent. Tache cérébrale present. Petechial rash on trunk and limbs, with many large purpuric blotches. Cardiac dullness increased to right side of sternum. Blood examination: Total leucocytes, 31,000. Differential count: Polymorphs, 85 per cent.; lymphocytes, 5 per cent.; mononuclears, 7 per cent.; myelocytes, 3 per cent. Lumbar puncture: 50 c.c. perfectly clear fluid under pressure. No increase of cellular content; protein content not increased; no fibrin; reduced Fehling's solution. 2 c.c. spread on plate gave four colonies of meningococci; 1 c.c. blood in broth gave profuse growth. Patient remained comfortable for some hours and did not complain of pain. The pulse became more and more feeble, until it could not be felt at wrist. Died suddenly. Remained conscious to the end, and for some time before death no heart sounds could be heard and there was intense cyanosis.

Post-mortem.—Meninges congested. Slight amount of exudate about optic chiasma and on under surface of cerebellum. Faintly turbid fluid in lateral ventricle. Extensive hæmorrhage into substance of adrenal gland. Petechial hæmorrhage under pericardium and into intestinal mucous membrane, &c.

2. After a similar abrupt onset the patient becomes almost immediately unconscious.

At first the signs of involvement of the meninges are present, but later they may be replaced by complete muscular flaccidity. A profuse purpuric rash appears, the breathing becomes stertorous, and the patient intensely cyanosed. Cardiac dilatation commences, the heart becomes more and more feeble, and finally ceases to beat. The cerebro-spinal fluid is extremely turbid and is under considerable pressure. It contains many polymorphs and abundant meningococci, both intra- and extra-cellular. Fibrin is present, and it no longer reduces Fehling's solution. In most cases the meningococcus can be cultivated from the blood.

Blood examination.—Polymorphs, 74 per cent.; mononuclears, 8 per cent.; lymphocytes, 18 per cent.

Polynuclear count	I.	II.	III.	IV.	V.
	56%	27%	14%	3%	0%
	83%		17%		

This shows the extent of the general infection.

Post-mortem.—Extensive purulent infiltration of the cerebral and spinal meninges. Increased quantity of cerebro-spinal fluid, which is very turbid. Hæmorrhages into the adrenal glands. Petechial hæmorrhages into other organs as described in the first class may be present.

These two classes are not sharply divided and intermediate cases are met with.

Pathology.—Post-mortem examination also reveals two types of cases. In one type the brain and cord are merely congested. The congestion may not be marked, there may be very little fluid in the lateral ventricles or cisternæ, but this fluid is slightly turbid. The presence of this small amount, not more than normal, of turbid fluid is found chiefly in the lateral ventricles and the cisterna chiasmatis, and may be the only macroscopic sign of involvement of the central nervous system. In the other type there is extensive involvement of the pia-arachnoid, giving the well-known appearances.

There are, however, two conditions which have been invariably present in our series of cases of malignant cerebro-spinal fever—viz., a purpuric rash and a hæmorrhagic state of the adrenals The rash is hæmorrhagic and varies in size from petechial spots to large areas of several square inches. There may be petechial hæmorrhages on the epicardium and on the serous surface of the intestines. The adrenals are found to be dark red in colour, enlarged, and friable. Their weight may be as much as 24 or 28 grammes. Microscopically, the medullary substance is replaced by effused blood, and very few chromaffin cells are to be seen. The reticular, fascicular, and glomerular zones show distended capillaries and red blood corpuscles effused between the cortical cells. The cells are distorted by pressure, and many have lost their outline. The refractile granules are much diminished in number.

The occurrence of hæmorrhage into the adrenal glands has been previously noted, but sufficient importance has not been attached to its frequency. The destruction, by hæmorrhage, of the medulla of the adrenals would account for the curious clinical phenomena—diminishing, and later absence of, blood pressure and the muscular flaccidity. The hypotension is, of course, directly due to the loss of epinephrin, the normal stimulus to the "myoneural function" of the sympathetic autonomic system. The muscular flaccidity, with loss of neck stiffness, Kernig's and Brudzinski's signs, and knee-jerk, is accounted for in the same manner, and would tend to confirm the view that epinephrin not only acts upon the plain muscle innervated by the sympathetic autonomic system, but also has a stimulating effect upon the tone of the skeletal muscles.

The presence of acute hæmorrhagic adrenalitis, although not confined to cerebro-spinal fever, is so common in that disease as to suggest a selective action by the meningococcus on the chromaffin cells, and when it is remembered that the medulla is developed from the same neuroblastic masses as the sympathetic system the theory has further grounds for belief. But we have no proof that the hæmorrhage and cell destruction commence in the medulla. The cortical cells and refractile granules share the same fate as the medullary cells, and it is quite possible that the cortex is the starting point. The lipoids of the cortex, thought to be specially related to the formation of myelin, may have initiated the pathological condition by their sudden withdrawal from the cortical cells, in response to the myelin degeneration taking place in the central nervous system.

Treatment.—The utilisation of the knowledge of this tendency to hæmorrhagic adrenalitis is important. The acute case with rapidly falling blood pressure should have adrenalin injected intravenously in such doses as will keep the arterioles sufficiently contracted to maintain the circulation, in the hope that either the chromaphil cells of the other parts of the chromaffin system will increase and take over the function of the adrenals or that the medullary cells will recover.

REVISION OF PANEL DOCTORS' LISTS.—In the House of Commons recently Mr. Yeo, M.P., asked a question as to the remuneration of medical men who are only informed that an insured patient is no longer entitled to medical benefit a long time after he has become so. Mr. Charles Roberts, in a written answer, replied by stating that such matters were dealt with in a pamphlet recently published for the purpose of correcting misapprehensions, which pamphlet he was sending to the honourable Member. The pamphlet referred to was clearly Memorandum 229/I.C., which explains the system of remunerating medical practitioners by a system of calculation and not by paying a precise amount for each insured person, according to the exact time during which he is entitled to treatment by a particular doctor.

THE IMPORTANCE OF GETTING A PREGNANT WOMAN UNDER MEDICAL SUPERVISION,

AND AFFORDING HER THE NECESSARY TREATMENT.[1]

BY AMAND ROUTH, M.D. LOND., F.R.C.P. LOND.,

CONSULTING OBSTETRIC PHYSICIAN TO CHARING CROSS HOSPITAL AND CONSULTING PHYSICIAN TO SAMARITAN HOSPITAL FOR WOMEN.

SOON after our Council asked me to read a short paper to this section on the subject under discussion, I read an important monograph on "The Care of the Pregnant Woman," by Dr. Archibald Donald, of Manchester.[2] I agree with almost everything in that paper except his three summing-up conclusions, which seem to me to oppose some of his arguments.

Surely the fact that still-births are often due to "accidents of childbirth," as the Registrar-General calls them, is no argument against the supervision of pregnant women, for such accidents are often due to undiscovered pelvic abnormalities. Nor do I see that even if "greatly increased supervision" would only result in "comparatively few" fœtal lives being saved, it is any argument against such increase of supervision.

Dr. Donald's first conclusion that such increase of supervision would cause unnecessary trouble because women would come voluntarily for help in cases where danger threatens, does not seem borne out by one's own experience or by Dr. Donald's own statements. Many complications are subjectively unsuspected. The expression "medical supervision" does not necessarily mean continuous or frequent interviews. Primarily it means one interview and a preliminary examination of urine. Subsequent interviews and urine tests take place as the doctor thinks desirable, or when the patient notices some sign or symptom which disturbs her.

If Dr. Donald is right that increased supervision is unnecessary, because its results would be comparatively small, I would ask how it is that emergency Cæsarean operations for unrecognized pelvic contractions continue to be sent to our hospitals. Some of these cases, owing to previous attempts at delivery, are already septic and their mortality is high. How is it that among the poorer classes emergency admissions to our hospitals of cases of eclampsia are still so numerous? Why should 3 per cent. of still-births be now notified under the compulsory extension of the Notification of Births Act? Why especially should there be so many macerated still-births? It is I think agreed that the large majority of macerated fœtuses are due to either syphilis or maternal toxæmia.

Sir Francis Champneys, who is of course in favour of medical supervision, in a letter on "Health Visitors and Birth Inquiry Cards,"[3] says: "It is a mistake to suppose that ante-natal care has only been discovered in the twentieth century. All careful doctors have practised it for a very long time and all careful midwives have done the same." He adds "that the Rules of the Central Midwives Board have recognised it from the beginning." Dr. J. W. Ballantyne's work on ante-natal pathology and ante-natal hygiene really was a "discovery" from the fœtal point of view, and he began his prematernity work in the Edinburgh Royal Infirmary in November, 1901. In England there were no infant-welfare or ante-natal clinics before 1906. Apart from hospital routine, no systematic ante-natal work was started till 1911, when it was commenced in Birmingham and Leeds, and that was mainly home-visiting of expectant mothers.

There are, of course, many careful doctors, but even careful doctors do not always extend their care, unasked, to pregnant women or to unborn babes. Midwives, although not paid for visiting their patients during pregnancy, are encouraged by the new (1916) Central Midwives Board Rules to extend their ante-natal care to the "unborn child," for in the subjects for examination for their certificate there is now included the "hygiene of pregnancy and its diseases, complications, including abortion, both in relation (*a*) to the

[1] Abstract of paper read before the Obstetrical Section of the Royal Society of Medicine on Nov. 2nd, 1916.

[2] Brit. Med. Jour., 1916, ii., 33.

[3] Ibid., 1916, ii., 438.

mother and (*b*) the unborn child." Previously it was worded: "Pregnancy and its principal complications, including abortion." This extension of interest to the unborn child will greatly increase the usefulness of the midwife. It is a possible danger that if midwives are to be trained in, and examined on, the diseases and complications of pregnancy it may be difficult to prevent them treating such conditions, at all events for a time, instead of at once sending for medical assistance as the Rules require.

In an address on Antenatal Hygiene early in 1914, I pointed out that the death-rate of infants during their mothers' pregnancies was as great as, or probably greater than, the death-rate amongst their survivors in the first year of life. This was based on the notification of 3 still-births per 100 births, and on the estimate made by many experts that abortions and miscarriages are four times as numerous as still-births; if so, it means about 150,000 deaths in utero or during child-birth in England and Wales every year. How many of these would be saved if we could always detect syphilis and toxæmia in early pregnancy!

The fact is that the life of the infant and of the unborn babe, like silver in the time of Solomon, was of small account with a high birth-rate and a prolonged peace. Now, with a small birth-rate, and when mothers are mourning the loss of "only sons," and have an added and often expressed sorrow that they might have had others, the life of the child is of enormous importance, and steps to ensure maternal and infant welfare are being initiated at conception instead of being delayed till child-birth, to the great advantage of both the mother and the child.

As a result of increased interest in the unborn child, a large number of ante-natal clinics and maternity centres have been instituted with the primary object of trying to save the child, but also indirectly benefiting the mother. Where the clinic is initiated by "Associations for Preventing Infantile Mortality," such as that presided over by Sir Thomas Barlow, or for encouraging "Infant Welfare," or as part of the organisation of hospitals for children, &c., it is natural that the nomenclature should be from the child's point of view rather than that of the mother, and the phrase preferred at such centres is ante-natal rather than ante-partum. There are now 750 such maternity centres in Great Britain and Ireland.

Till a few years ago women who came to be registered for their confinement in the indoor or extern departments of many general hospitals had their names and addresses taken down by the obstetric house physician, who may have had no previous experience of the diseases of pregnancy, and often had very little spare time. It was optional for him to examine, or omit to examine, the patient, or to test her urine. No students used to attend this registration, for rarely was any clinical knowledge to be gained. Now opportunity is taken to utilise the registration of expectant mothers by making it, and sometimes calling it, an ante-partum or ante-natal clinic, greatly to the advantage of patients and students, and the department is usually in charge of the obstetric registrar or tutor, or even of the assistant obstetric physician or surgeon. Some arrangement is also made for pre-maternity wards or for beds in the maternity ward for pregnancy complications.

Notwithstanding the conclusions which Dr. Donald drew in his paper and which, I fear, may tend to check enthusiasm in ante-partum and ante-natal hygiene and care, I feel sure that he really does not disagree with me, for a most interesting account is given by Dr. W. Fletcher Shaw[4] on "Ante-partum Clinics" as conducted at St. Mary's Hospital, Manchester, where Dr. Donald has done such admirable and well-recognised work. Every pregnant woman going there to be registered for indoor or outdoor parturition is seen by the resident obstetrical officer, who has always had previous obstetrical experience. Every primigravida and every woman with a history of a previous difficult confinement is examined by him. This is ideal supervision, and so also is the routine examination of urine as insisted upon by Dr. Donald.

But Dr. Shaw adds: "It is not sufficient to have well-equipped and well-staffed maternity hospitals, the general practitioner must have practical training in the whole department of midwifery." This is the right attitude to adopt as regards supervision. The doctor must be able efficiently to supervise his pregnant patients. Routine urine tests should always be made, and further tests made if there is albuminuria to decide upon its toxic origin. In addition to the necessity of ascertaining whether the pelvis is contracted, whether there are clinical evidences of toxæmia, or whether the woman is syphilitic, I will merely allude to such maternal conditions as malnutrition, Bright's disease, diabetes, heart disease, and tuberculosis, any of which should, if present, be discovered and treated. Early this year I saw a lady who was only six weeks pregnant and thought herself well, but was already showing evidences of cardiac insufficiency. Sir James Mackenzie's advice (and he is not a pessimist) was "immediate operation for the removal of the ovum." Such cases, rare though they be, cannot be seen too early. Plumbism perhaps due to diachylon, asthma, Graves's disease, malaria, chronic colitis, or chronic bacilluria may also be discovered and the mother's health safeguarded. The acute specific fevers, as well as acute pneumonia or bronchitis, or gonorrhœa acquired during pregnancy, or acute coli pyelonephritis, need not be here considered, for such conditions would necessarily lead to the patient coming under medical care.

Mechanical abnormalities such as retroversion of the gravid uterus could be detected before symptoms have appeared, and sequelæ such as impaction of the fundus uteri, abortion, retention of urine, cystitis, or sepsis prevented. In addition to pelvic contractions and deformities, potentially obstructing fibromyomata or ovarian tumours, or cicatricial stenosis of the cervix or vagina, may each be unsuspected by the patient, but are easily discoverable during early pregnancy, and may be either treated at once or left to be dealt with at a later date as may be indicated. Ante-partum hæmorrhage need not be considered, for the woman would in most cases seek medical advice, so that ectopic gestation, mucous polypi or cancer of the cervix, placental detachments, &c., would become known. Similarly hæmorrhage due to hydatidiform degeneration of the chorion or to the presence of a carneous or blood mole would lead to a doctor being consulted.

In the later months fœtal malpositions, malformations, such as hydrocephalus, or relatively large children, all of which may be causes of "accidents of child-birth," may be sometimes discovered. The recognition, for instance, of a transverse lie early in labour, or during late pregnancy, followed by appropriate treatment, would minimise risk to mother and child.

Prematernity beds.—Every maternity centre and ante-natal clinic should be linked up with hospitals where so-called "prematernity beds or wards" are available. Observation by experts and medical or surgical treatment can then be carried out.

Notification of pregnancy.—If all midwives could be encouraged to take their patients to a maternity or ante-natal clinic the patients would by such a visit voluntarily and automatically notify their pregnancy to the doctor in charge, without any publicity whatever. This is a very different thing from *compulsory notification*. Any attempt to enforce compulsory notification to the health officer or his representative would in many cases result in the woman putting off notification till very late, or perhaps not till her confinement, and would arrest the good progress now being made in securing medical supervision.

Research.—Research work in ante-natal pathology must be associated with medical supervision of pregnant women, especially as regards syphilis and toxic albuminuria and their effect upon mother and fœtus. A pathological and chemical laboratory should be provided within easy access of all groups of maternity centres and clinics in large towns. This could either be in a general or a lying-in hospital or be one of the laboratories recommended in the report of the Royal Commission on Venereal Diseases. Every fœtus, and especially every macerated fœtus, whether born before or after viability, and every ovum, however early, expelled from a woman who has had other abortions or still-births should be sent to a pathological expert for examination, and search made for the *Spirochæta pallida* or other cause of death. In the new (1916) Rules of the Central Midwives Board midwives are instructed to keep the body of every still-born child till the doctor has seen it.

There seems a tendency for some pathologists to consider that syphilis in the parents only causes fœtal disease or death in the later months. This appears to be founded upon

[4] Brit. Med. Jour., Oct. 14th, 1916.

the fact that the *Spirochæta pallida* is not found in the earlier fœtuses, and yet syphilitic women often have alternating abortions and still-births. Dr. F. W. Mott showed this conclusively in his interesting epidiascope demonstration at the discussion at this section in April, 1914, following an address by myself on "The Need for Research in Antenatal Pathology," and those who doubt that syphilis causes abortion should read his remarks in our Proceedings for that month.[5] If in these cases still-births are proved to be syphilitic, surely it is logical to assume that the abortions in the same women are due to the same cause, even though search for the spirochæta is negative. Those who hold these new views admit that toxic albuminuria in pregnancy may cause fœtal death during both early and later pregnancy, and that in the later months the fœtus may become macerated. The evidence in the case of the mother, known to have syphilis by a positive Wassermann reaction, does not seem to me to be different from that in the case of the woman who is known to be suffering from a toxic albuminuria. In both cases the mother has a disease which may destroy fœtal life at all stages. I cannot help thinking that the existence of spores in the life-history of the *Spirochæta pallida*, as described by McDonagh, may be an explanation of the failure to find spirochætes in abortions, the spirochætes being destroyed by the ferments of the chorionic villi, whilst the spores escape.

Whether, therefore, the question of medical supervision during pregnancy be considered from the points of view of the welfare of the mother and unborn child, or as an educational stimulus to the nation, or from the standpoint of the increase of pathological, chemical, and therapeutical knowledge for the profession, there can surely be no real difference of opinion that every pregnant woman should be seen by a doctor, and then have such supervision as her condition requires.

Manchester-square W.

[5] Proc. Obst. Sect., Roy. Soc. Med., 1914, p. 288.

TWO FATAL CASES OF METASTATIC GAS GANGRENE.

BY KENNETH TAYLOR, M.A., M.D.,

DIRECTOR OF LABORATORIES, ROBERT WALTON GOELET RESEARCH FUND, HÔPITAL COMPLEMENTAIRE V.R. 76, FRANCE.

THE following two cases are reported because of their singularity and because of the light which they may throw upon one of the methods of extension of infection by the *B. aerogenes capsulatus*.

CASE 1.—A private, wounded 10 days previously by shell fragment. First dressing applied within a few hours. Admitted to the hospital with diagnosis of a perforating wound of right arm with fracture of the humerus at its lower third and gaseous gangrene of the arm. Examination of the arm showed marked swelling and tension of the muscle fascia; purplish discolouration of the skin reaching from the shoulder to the lower third of forearm; several blebs over triceps muscle; diffuse subcutaneous emphysema extending from the shoulder well on to the forearm. Radial pulse could not be felt. Operation: open-flap amputation just below the shoulder-joint was performed immediately. Tissues at site of amputation showed gas in subcutaneous tissue and muscle. The muscles about the shoulder-joint were also incised and found to be gaseous, pale brick-red in colour, and dry. As far as possible the gangrenous portions of these muscles were excised. Patient was *placed in a sitting position*. His general condition improved steadily for five days, when, although the infection about the shoulder-joint appeared to be arrested, he again showed signs of acute intoxication, and died on the sixth day after operation. Blood taken from the median basilic vein of left arm three days before death was sterile. Necropsy performed five hours after death showed no evidence of further extension of the infection on to the trunk. Examination of the limbs showed gaseous gangrene of the right gluteus maximus and medius, where sustained pressure had resulted from the sitting posture. The infection had extended to the adductor muscles of the right thigh. Cultures of heart's blood, muscles of the shoulder and of right gluteal muscles showed pure culture of the *B. aerogenes capsulatus*.

CASE 2.—A private, wounded six days previously by shell fragment. Was dressed one hour after injury, transported by motor to field ambulance, where a piece of shell was removed from the right gluteal muscles. He was evacuated the next day by train. When admitted to the hospital patient was lying on *his left side* and stated that he had been forced to maintain this posture because of the position of the wound in the right buttock. On the *right* buttock was a large excavating wound which had evidently been incised. Cultures from this wound showed the *B. aerogenes capsulatus*. The following day gaseous distension of the right gluteus maximus was evident. An operation was performed, the gluteal muscles being widely opened. The following day, however, his general condition was worse, and further examination showed gaseous distension of the *left* thigh—upon which he had been resting continuously. There was no subcutaneous crepitation, and no blebs or discolouration of the skin, but tension of the fascia sheaths was evident and the thigh was tympanitic to percussion. An operation was performed: the right gluteal muscles were again examined and the exposed necrotic portions excised. The infection appeared to be limited to the region of the wound. A longitudinal incision was made through the fascia in the outer surface of the left thigh from the level of the great trochanter to 5 cm. above the knee-joint. Through this the vastus externus muscle immediately bulged; it was incised but appeared contractile and normal. A similar incision was made on the inner surface of the left thigh, when the muscles exposed bulged out through the wound. The muscles seemed to be in healthy condition. The patient, however, became more and more toxic, and died 24 hours later—eight days after injury and two days after admission to the hospital. Necropsy showed no extension of the gangrenous process in the right gluteal muscles, the infection being limited to the tissues exposed in the wound. There was no communication between the wound of the right gluteal muscles and the tissues involved in the left thigh or left gluteal region. Careful examination of the subcutaneous tissue and muscles intervening showed no evidence whatever of infection. Subcutaneous crepitation was noted over the *left* thigh and leg nearly to the ankle-joint and upwards over the anterior surface of the left half of the abdomen well above the crest of the ilium. The left half of the scrotum was distended with gas. There was no discolouration of the skin and no blebs. Examination of the left thigh showed extensive necrosis of large muscle masses, chiefly limited to the three glutei, the rotator muscles of the thigh, and the adductors. The other muscles appeared to be intact. Cultures from the operative wounds of left thigh and gaseous subcutaneous tissue above the crest of the left ilium showed the *Bacillus aerogenes capsulatus*. Cultures of the gaseous subcutaneous tissue over the gastrocnemius muscle on the left leg remained sterile. *Culture of the heart's blood was sterile.*

These two cases are similar in the following respects: In both the focus of the infection and the gangrene which was the final cause of death were of metastatic origin—e.g., there was certainly no direct extension from the wound to the area of muscle destruction. In the first, blood culture three days before death proved negative; in the second, culture from the heart's blood at necropsy was likewise negative.[1] In both the terminal gangrene occurred over a week after injury. In both the site of the metastatic gangrene was that upon which continuous pressure[2] was exerted by the posture which the patient was obliged to maintain. Apparently direct extension through subcutaneous tissue, muscles, and muscle fascia could be excluded. Extension by superficial or deep lymphatics seems to have been unlikely. The results of the blood cultures gave no proof of any true, continuous bacteriæmia, but the blood stream appeared to be the most probable mode of extension.

The conclusions to be drawn from the two cases appear, therefore, to be:—

1. That blood invasion may occur during the life of the patient but is probably only of short duration.

2. That the vitality of a muscle mass may be so lowered by continuous subjection to pressure and the resultant interference with its circulation that it may become a site for the fixation and activity of the bacilli following the temporary invasion of the blood.

3. That it is advisable, in the case of a patient who has a wound infected by the gas bacillus, to make a careful examination of the entire body and not limit the attention to the region of the wound.

4. That it is dangerous to allow a patient suffering from a wound infected by the gas bacillus to maintain a fixed position in bed.

[1] This is not unusual in necropsies performed soon after death. Other cases are reported in the following paper: "Observations on the Pathology and Bacteriology of Gas Gangrene," Journal of Pathology and Bacteriology, 1916, xx., 384.

[2] "Factors Responsible for Gaseous Gangrene," THE LANCET, Jan. 15th, 1916.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

Anaerobic Wound Infection.

A MEETING of this section was held on Dec. 14th, Mr. W. MCADAM ECCLES being in the chair.

Miss M. H. F. IVENS, M.S., Médecin-chef Hôpital Auxiliare 301, read a paper entitled "A Clinical Study of Anaerobic Wound Infection, with an Analysis of 107 Cases of Gas Gangrene." The paper was based on 464 cases of gas infection, of which 107 were clinically gas gangrene, observed during two years' work in a French military hospital of 400 beds receiving its wounded directly from the Somme, through an evacuating station, where the most urgent cases were taken from the train. Difficulties of minute investigation were increased by the large numbers coming in together after an attack. Attention was drawn to the importance of complete bacteriological study and the careful examination of the X ray plates which, in the majority of cases, showed the situation of gas bubbles or streaks according to the species of microbe present and were extremely valuable aids in a decision as to the form of treatment required. Factors of importance in the production of gas gangrene were: 1. The proximity to contaminated soil; wounds of the lower limb showed a mortality three times as great as those of the upper, though wounds of the upper were more frequent. 2. Shell wounds were six times as frequent in gas gangrene as in ordinary infected wounds. 3. The presence of an infected "wad" of clothing kept up infection. 4. The interval between the wound and the first surgical intervention; insignificant wounds might cause fatal results if untreated and severely infected. 5. Early treatment was most important in the prevention of gas gangrene. 6. Vascular lesions were an important factor when due to injury; as a remedial measure, such as ligature of great vessels, they were not important; 22 cases with vascular lesions were followed by gangrene in 6 only. 7. 60 per cent. of gas-infected cases had fractures, and 71 per cent. of those of gas gangrene. 8. Wounds of the calf, trunk, or hip joint were specially dangerous if deeply seated. 9. Tissue injury had an important influence; gas abscesses were frequently seen in gas infections at the site of subcutaneous injections or near simple fractures in the same case. 10. Intramuscular tension from within or without was a potent aid in the production of gangrene. 11 Joint injuries occurred in 13 per cent. of gas infections and in 20 per cent. of gas gangrene. They increased the gravity of cases, and damaged parts were difficult to immobilise without pressure. The flora of gas gangrene was usually multiple: *B. perfringens* was present in nearly every case, *B. sporogenes* in 41 cases, *vibrion septique* in 6 cases (several fatal); *B. histolyticus*, *B. Hiber IX*, and *B. œdematiens* were all reported, but less frequently. Streptococci of a virulent type were present in 59 cases and added to the gravity of the infection. Tetanus occurred in 15 cases, and was demonstrated bacteriologically in 7. Masked and latent forms of tetanus were described. Intrathecal administration of serum, 30 c.c. at a dose, together with subcutaneous injections up to 30 and 40 c.c. per diem, proved successful. Seven clinical forms of gas gangrene were noted: 1. Classic form (Weinberg). 2. Toxic or œdematous type. 3. Mixed forms. 4. Local gas abscess. 5. Superficial and deep-seated gas phlegmon. 6. Chronic and latent infections. 7. Gas septicæmia or pyæmia. Of 464 cases of gas infection 42 were fatal, 25 dying from gas gangrene, 4 with tetanus, and the remainder with severe fractures, or brain or abdominal injuries. Amputation was considered necessary in advanced cases of gangrene and performed 65 times with 48 recoveries by the open method with lateral incisions. When gangrene was limited to groups of muscles or joints, excision was performed 41 times with 33 recoveries. Hypertonic salt treatment alone was found to be unsuccessful, but combined with 2½ per cent. carbolic acid had given good results. Iodine vaccine-therapy was tried and appeared to be more successful with added streptococcal infection. Other methods were used, such as continuous irrigation with eusol, Carrel solution, or normal saline (all apparently giving the same results). Ten cases of very severe gas gangrene had also been treated by anti-perfringens, anti-œdematiens and anti-vibrion septique serum, kindly supplied by Dr. Weinberg. In 5 cases (one being a septicæmia with triple anaerobic infection) the results had been successful. The fatal cases were already septicæmic before serum was given. There was distinct evidence that its curative use might be advantageous, and probably its prophylactic use even more valuable.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Cases and Specimens.—Speech Records of Cerebral Diplegia.

A MEETING of this section was held on Nov. 24th, Dr. LEONARD GUTHRIE being in the chair.

Dr. GUTHRIE showed a case of Family Splenomegalic Jaundice in a girl aged 10 years. The father and two of the three surviving children suffered from the disease in its typical form. He also showed the third child, a girl aged 7½ years, as a case of ascites of obscure origin. The ascites had been of sudden onset and rapidly increased. A gallon of fluid was evacuated and had not reappeared after operation. The diagnosis lay between tuberculous peritonitis and an unusual form of the family disease.

Dr. F. LANGMEAD showed a case of Dystrophia Adiposa Genitalis with Congenital Lues in a boy aged 15 years and 10 months. The father had died from general paralysis and the mother had tabes dorsalis. The boy was stunted, obese, and feminine in build. Mentally he was childish. There was disseminated choroiditis with waxy atrophy of the discs in both eyes. No polyuria; and no glycosuria after having taken 130 gm. of dextrose. A skiagram showed a rather small pituitary fossa.

Dr J. P. PARKINSON showed a case of Diabetes Mellitus and Infantilism in a girl aged 10 years. The disease had begun four years ago and growth had almost ceased at the same time. An X ray photograph of the skull showed a normal sella turcica, and one of the wrists showed bones the size and shape of those of a girl aged 6.

Dr. EDITH BRONSON (for Dr. G. A. SUTHERLAND) showed a case of Dermato-myositis in a girl aged 5 years. The disease had begun in July, 1916, with fever, pains in the joints, and a leucocytosis of 23,000 white cells per c mm. The condition, which at first had involved chiefly the hands, forearms, feet, and the lower part of the legs, had gradually spread until all parts of the body, including the face, had become affected. With radiant heat baths there had been marked softening of the subcutaneous tissues.

Dr. E. A. COCKAYNE showed Hereditary Neuro-fibromatosis (von Recklinghausen's Disease) in a woman aged 35 and her two children, a boy aged 5½ years and a girl aged 10 months. In the mother there were innumerable punctiform pigment spots and café-au-lait patches and a few sessile molluscous tumours on the trunk and limbs. The children showed only café-au-lait patches, except for an early molluscous tumour on the boy. These had been present at birth.

Dr. J. D. ROLLESTON showed Hereditary and Familial von Recklinghausen's Disease in two sisters aged 19 and 11 years respectively. Their father had a generalised eruption of molluscous tumours, punctiform pigment spots, and café-au-lait patches. The elder daughter had in addition a large plexiform neuroma of the right upper arm, whereas the younger had only punctiform pigment spots and café-au-lait patches. Dr. Rolleston stated that the familial and hereditary form of the disease was of some rarity, only 42 cases having been recorded in the literature.

Dr. E. PRITCHARD showed a case for diagnosis. The patient, a boy aged 9 years, had been knocked down by a motor-car and on the next day had cough and pain in the chest. The chest on the left side had become smaller and was dull on percussion except for a small area to the left of the vertebral column, where it was resonant, and a tympanitic area in the left axilla. The breath sounds were very weak. A skiagram showed considerable opacity on the left side. The heart was drawn over to the left.

Dr. E. W. SCRIPTURE read a paper on Speech Records in Cerebral Diplegia with indications of a new method of treatment.

Reviews and Notices of Books.

Surgical Contributions from 1881–1916.

By J. RUTHERFORD MORISON, M.B Edin., F.R.C.S. Edin., F.R.C.S. Eng., Consulting Surgeon, Royal Victoria Infirmary, Newcastle-on-Tyne; Professor of Surgery, Durham University; Examiner in Surgery, Liverpool University. Vol. I., General Surgery. Pp. 427. Vol. II., Abdominal Surgery. Pp. 953. London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. Bristol: John Wright and Sons, Limited. Toronto: The Macmillan Company of Canada, Limited. 1916. Price 42*s.* net.

WE welcome in collected form the articles on various aspects of surgery written by Mr. Rutherford Morison from time to time. It is always convenient, to put the matter on the lowest ground, to have in a compact guise the fugitive pieces of a great surgeon, and in the past we have had brought together, to quote only a few instances, the writings of Sir Benjamin Brodie, Mr. Cæsar Hawkins, and Dr. Henry Bigelow. This laudable precedent has been followed in the present instance, and we have here in two volumes a striking amount of valuable contributions to the literature of surgery; and though we thought that we were acquainted with most of Mr. Morison's writings, we must confess that we were somewhat surprised at the large number of papers, for in truth they form a somewhat formidable whole. Yet, though they may be so many, there is a striking unity which runs through them all; we find everywhere the same acute recognition of the essential points, the same accurate appreciation of the value of theories and methods, which have been recognised in Mr. Morison by all who have had the privilege of knowing him.

Mr. Morison studied under Lister, and therefore it goes without saying that he was an advocate, an enthusiastic advocate, of antiseptic surgery, but he has in no wise failed to recognise the value of "aseptic" surgery. In the present volumes there are to be found foot-notes which are comments on the papers, and represent the opinions of the author at the present time. Here we find no unwillingness to declare an alteration of opinion, and we meet with many indications that Mr. Morison has not merely kept himself fully abreast of the advancing wave of surgery, but that he has been one of our most active and original leaders of surgical thought.

There are few who will not profit from an examination of these volumes; many illuminating remarks will be found scattered about, and on nearly every page are to be discovered points of interest and importance. One of the volumes deals with general surgery and the other with the surgery of the abdomen; and it is worthy of note that the second volume is double the thickness of the first. The task of collecting these papers has been performed by Dr. W. D'Oyly Grange, of Harrogate, and the medical profession should be grateful to him for doing it; and he is also responsible for an excellent index, which adds much to the comfort and ease of those who wish to consult the volumes.

LIBRARY TABLE.

Diseases of the Throat, Nose and Ear, for Practitioners and Students. By W. G. PORTER, M.B., B.Sc., F.R.C.S. Edin. Second edition, revised by P. MCBRIDE, M.D. Edin., F.R.S.E. Illustrated. Bristol: John Wright and Sons, Limited. 1916. Pp. 280. Price 7*s.* 6*d.* net.—The first edition of Dr. Porter's useful manual has long been out of print, and the volume before us has been edited in his absence on active service by Dr. McBride, who has added a note on suspension laryngology and other recent methods. The scope of the book has not been altered, and it remains a source of sound teaching of moderate dimensions for the senior student and the general practitioner.

The Sexual Disabilities of Man, their Treatment and Prevention. By ARTHUR COOPER, M.R.C.S., L.R.C.P. Lond. Third edition. London: H. K. Lewis and Co., Limited. 1916. Pp. 227. Price 6*s.* net.—Mr. Cooper's book has evidently proved of use to the student and the practitioner for whom it was intended. Since it first appeared much has been written on the same subject, especially in Germany and America, and the study has become to some almost an end in itself. But the book before us remains an adequate as well as a cleanly guide to sexual disabilities in man, and one which will enable the practitioner to get a grasp of an elusive subject and to be of real service in the intimate lives of his patients. A useful section on the prevention of sexual disability has been added to this third edition and considers venereal diseases in the light of the Report of the Royal Commission.

The Treatment of Diseases of the Skin. By W. KNOWSLEY SIBLEY, M.A., M.D. Camb., Physician to St. John's Hospital for Diseases of the Skin. Second edition. London: Edward Arnold. 1916. Pp. 304. Price 6*s.* net.—In his second edition, which follows the first after an interval of four years, Dr. Sibley has kept pace with the most recent developments of dermatology. A new chapter on radium has been added and those on X rays and ionisation extended. Short sections have been inserted dealing with angioma serpiginosum, angiokeratoma, atrophodermia neuriticum, pellagra, strophulus, yaws, and other conditions on which interest has recently been focussed. Sixteen original photographs appear illustrating the results of special treatments. The general scope of the book remains the same, and it will be found useful for handy reference to the treatment of skin cases.

Links in a Chain of Research on Syphilis (Oxidation and Reduction). Being the Hunterian Lectures delivered before the Royal College of Surgeons of England. By J. E. R. MCDONAGH, F.R.C.S. London: Harrison and Sons. 1916. Pp. 206. Price 5*s.* net.—In this volume Mr. McDonagh has reprinted his Hunterian Lectures as they appeared in THE LANCET of May 13th and 20th, 1916, with the text increased by the addition of references and of detailed notes of cases. A chapter has been added on the significance of the hydrogen and hydroxyl ions in biology, and a final one of 12 pages summarising his whole work. The book is conveniently divided into chapters and adequately indexed.

Diseases of the Eye: A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. DE SCHWEINITZ, M.D., LL.D., Professor of Ophthalmology in the University of Pennsylvania. Eighth edition. With 386 illustrations and 7 coloured plates. London and Philadelphia: W. B. Saunders Company. 1916. Pp. 754. Price 25*s.* net.—The last edition of this standard work has been exhausted in three years, and the author has again made extensive additions and alterations in order to keep it fully up to date. New paragraphs have been inserted on such matters as anaphylactic keratitis, the macular changes of family cerebral degeneration, the ocular symptoms of disease of the pituitary body, and various new operative methods. Lieutenant-Colonel R. H. Elliot describes his operation of corneo-scleral trephining and Dr. William M. Sweet a revised method of localising foreign bodies within the eye. The author has introduced metric equivalents of dosage throughout. Altogether the book merits the cordial reception which it has long received.

The Hope of the Future: The Management of Children in Health and Disease. By Dr. MARY SCHARLIEB. London: Chapman and Hall, Limited. 1916. Pp. 261. Price 6*s.* net.—The sub-title explains the scope of this little book. Dr. Scharlieb confidently hopes that the attention at present focussed on infant welfare will lead young married couples to a wiser and more natural method of life, and she rightly states that the parent cannot provide intelligently for the health and welfare of children without some knowledge of their structure and functions in health and of the diseases by which they are menaced. The first four chapters of the book are devoted to a sketch of the child in health and its development, the fifth deals in general with the child in sickness, and the rest of the book treats of various diseased conditions. A useful list of formulæ is given in an appendix. The book may be commended with confidence to the mothers and nurses to whom it is addressed.

The Rhymes of a Red Cross Man. By ROBERT W. SERVICE. London: T. Fisher Unwin, Limited. 1916. Pp. 176. Price 3*s.* 6*d.* net.—Mr. Service has seen the horror of the western front as an officer in the Canadian Red Cross, and has contrived not only to keep sane but to perceive humour in the most tragic situations. The plaint of the warrior who was always baulked of using his bayonet by the surrender of his opponents is a delicately witty

production. The author maintains a detached view of things, and his patriotism, although evidently genuine, does not prevent him from being a pacifist at heart and hating the whole business of slaughter. His rhymes are a serious contribution to the psychology of fighting.

JOURNALS.

Journal of Anatomy.—A change of very considerable importance to anatomists—one which has also an interest for all who are interested in the progress of medicine—has just been effected as regards the ownership and control of the *Journal of Anatomy and Physiology.* The journal was founded 50 years ago by Sir William Turner and Sir George Humphry to supply British anatomists and physiologists with a means of publication after the failure of the *Natural History Review* in 1865. The task of acting editor first fell to Sir George Humphry, then, for a long series of years, to Sir William Turner; afterwards to Professor D. J. Cunningham; while in recent years the main work of its management has devolved on Professor Alexander Macalister, of Cambridge University. After consultation with his colleagues on the editorial staff, Professor Arthur Thomson, Professor Arthur Keith, and Professor Arthur Robinson, Professor Macalister offered to transfer the management and ownership of the *Journal* to the Anatomical Society of Great Britain and Ireland. We learn that at a recent meeting of the Anatomical Society this offer has been gratefully accepted. The society caused a minute to be entered on its books, recording Professor Macalister's great services to British anatomy by the able manner in which he had conducted the *Journal.* The society has elected an editorial committee to manage the *Journal* on its behalf, the committee for the present year consisting of Professor T. H. Bryce (Glasgow University), Professor E. Fawcett (Bristol University), Professor J. P. Hill (University College, London), Professor G. Elliot Smith (University of Manchester), and Professor A. Keith (Royal College of Surgeons of England), the last-named being acting editor, and to him all communications should be addressed. It was also resolved to curtail the title to *Journal of Anatomy*, since there are two most ably conducted periodicals to serve the needs of physiology. We wish the *Journal of Anatomy* a continued career of prosperity under its new management.

Archives de Médecine Navale.—In this publication for September and October, the last issues which have reached us, Dr. Bertaud du Chazaud, a staff-surgeon in the French Navy, reports observations made on the Mongols when he was attached, in 1908, to the Lacoste Mission. This mission made archæological investigations in Mongolia, seeking records of the Huns, the Turks, and the Mongols who were cradled there, and came forth thence, each in their turn, to terrify Europe. The mission travelled mainly in Northern Mongolia, to the north of the desert of Gobi, where are the Kalkhas, descendants of the soldiers of Genghis Khan, and that tribe of the Mongols whose blood has been kept most pure. Their most striking character is the breadth and roundness of their faces, their snub noses, and the epicanthal fold on their oblique eyes; their scanty moustaches and absence of beard is also noticeable. Dr. du Chazaud remarks that as each nation's æsthetic sense grows up within its own country, each will think of beauty as specially the characteristic of its own type, consequently the Mongol considers the long face and prominent features of the European to be horrible: to Mongols Europeans look like horses. There are no chairs in Mongolia; the Mongol generally sits on his heels with his feet flat on the ground. He hardly ever walks in that huge empty country, but rides everywhere, even if it be but a hundred yards away. His horsemanship is creditable, he rides well, and, on the other hand, his walk is clumsy. His sight and his hearing are keen indeed, trained in those vast plains, but his taste, which approves sour milk and rancid butter, differs from ours, and he is not inconvenienced by the odour of unwashed bodies. The infant's skin at birth is pink, but turns yellow as the child plays naked about the tent. A nomadic pastoral people, their wealth is in their flocks of camels, horses, cattle, sheep, and goats. Naturally milk is their foundation food, fresh, sour, or as clotted cream, dried cheese, and koumiss. Barley-meal they buy of the Chinese, but vegetables and fruits are unknown. Sheep are eaten on great occasions, otherwise only when one seems sick to death. The butchers have a novel way of killing a sheep. The beast is laid on its back, the butcher kneels on the pubis, controlling the hind legs, pulls the fore-legs upwards, and makes a four-inch incision in the linea alba; through this he inserts his hand, feels for the left pillar of the diaphragm, burrows through that and ruptures the aorta within the cavity of the thorax. Dr. du Chazaud comments also on the marriage laws and burial rites of the Mongols.

New Inventions.

AN ORAL TUBE IN OPEN ETHER ANÆSTHESIA.

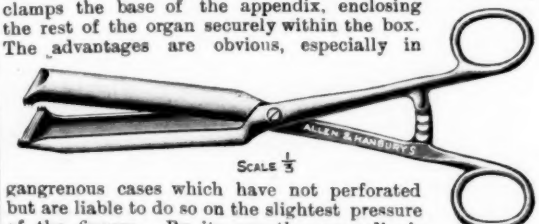
FOR the past nine months I have been using an oral tube for the administration of open ether in all gynæcological operations performed by Dr. W. Blair Bell at the Liverpool Royal Infirmary, and its use has been so uniformly advantageous that I am anxious to bring it to the notice of the medical profession. The tube is modelled upon one used in the United States and by Dr. Mott, of Stoke, and has been modified by Dr. Blair Bell, who first suggested its use to me. As shown by the diagram, it is a flat, hollow, metal tube 4½ inches in length, with a flange at the external end, the upper edge of which is hollowed out to fit beneath the nostrils, whilst in the lower half of the flange there is a small slit, through which, if required, a piece of tape can be threaded and tied round the patient's neck. The tube is so curved as to comfortably pass over the tongue into the pharynx. As soon as the patient's reflexes have disappeared the mouth is opened by depressing the lower jaw and the tube is slipped over the tongue. The lower jaw is then pushed forward by the middle finger of each hand pressing forward the angle of the jaw on either side, and at the same time gentle pressure exerted on the flange with both thumbs causes the tube to slip home. If the patient is only slightly under, the gag and tongue forceps will be required to open the patient's mouth sufficiently. The advantages of the tube are: It establishes a free and unobstructed airway whatever the position of the head or of the patient. It keeps the tongue from falling backwards, and thus is especially helpful in the Trendelenburg position. It is also useful in edentulous subjects in whom suction of the lips and cheeks produces occlusion. During the removal of the patient from the theatre to the bed its use prevents any cyanosis or obstruction to respiration due to flexion of the head or the jaw falling back.

The tube is made and sold by Messrs. Alexander and Fowler, instrument makers, Pembroke-place, Liverpool.

MONA DEW ROBERTS, M.B., B.S. Lond.,
Liverpool. Hon. Anæsthetist, Liverpool Royal Infirmary.

APPENDICECTOMY CLAMP.

I HAVE designed the clamp here illustrated for use in all cases of appendicectomy. When applied it efficiently clamps the base of the appendix, enclosing the rest of the organ securely within the box. The advantages are obvious, especially in gangrenous cases which have not perforated but are liable to do so on the slightest pressure of the fingers. By its use the appendix is more easily manipulated and the risk of contaminating the surrounding parts much reduced.



SCALE ⅓

Messrs. Allen and Hanburys, Limited, 48, Wigmore-street, London, W., are the makers of the instrument.

J. D. SPEID SINCLAIR, M.B., Ch.B. Glasg.,
Lieutenant, R.A.M.C.

THE LANCET.

LONDON: SATURDAY, DECEMBER 23, 1916.

The Universities and War Work.

IT seems to be a general suggestion that the new Government is a panel of business men. Amongst other things, this should help the country to a wider conception of the services which research work and scientific study are rendering the State. The universities, both those of historic foundation and those which are situated amidst our throbbing industrial centres, have already placed their technological departments at the disposal of the Government and the manufacturer. To-day all over the country the university is working hand in hand with the factory, and a new education has thus been set up, founded on the general principle that in the interests of the nation science and industry should be brought into real and active coöperation. The days of supineness in the scientific conduct of manufacturing affairs are numbered, and the policy of developing the technological side of education is now bearing fruit, but this policy must be widely extended. It is well to remember that technical equipment formed a prominent factor in the strong position occupied by the enemy at the outset of the war, and there is no doubt that technology must claim our very serious attention if we mean to hold a successful place in the business of the world.

The debt which medical science owes to the researches made on behalf of industry is already large, and as the application of science to industry becomes closer, so is medicine likely to gain. It was the study of fermentation in the brewing trade which led to the germ theory of disease, while the introduction of antiseptics was made possible by the coal-tar industry. Incidentally the products of this industry, known as residuals, furnished a profusion of dye substances, the intelligent application of which enabled a discrimination of organisms to be made under the microscope. The microscope gained enormously as an aid to medicine when the aniline stains proved selective. Further, a vast series of synthetics have been prepared, some of great value in medicine, as the result of the union of scientific and industrial energy. These examples suffice to show how medical science has benefited by the intimate study of technological questions, and they bring out clearly the good, unexpected as well as anticipated, which follows the application of science to manufacture. Medical and scientific men have long appreciated the significance of these things, but the public and many leaders of business are still oblivious to the necessity of conducting commercial concerns on scientific lines. The future prosperity of industry in this country—and this affects the well-being of professional and commercial classes equally—can only be ensured by banishing once and for all the "rule-of-thumb" principle. The spirit of university teaching has always been strongly opposed to this principle, and at last there is definite hope that empiricism in commerce will never see the light again. This is the meaning of the work which our great teaching institutions are doing at the present moment in furnishing the country with its arms of offence and defence. In the national crisis our universities—some of which have been popularly summed up for generations as asleep, and others of which are too young to have earned any general reputation one way or the other—have developed great and vigorous activities, devoting talent and skill to the successful issue of the war. Their laboratory staffs may be seriously depleted, but, unless called into service elsewhere, the professors are at their posts, to give the Government, or the industries concerned, technical advice and to undertake original researches such as those which have already added most materially to our chances of subduing a foe whose most formidable weapons have been industrial efficiency and ingenuity.

Any movement which impresses upon the community the splendid services which our universities are giving the nation in the present crisis is useful. It requires to be convincingly shown how essential is the relationship between science and industry, and how inevitable it is that we should adopt a system of education which, among other things, would disclose the vital bearings of science upon industrial development. In another column we draw attention to the important work that is being done by the Institute of Journalists, a section of which, including technical representatives of the institute, has been invited to study on the spot the facilities offered by the universities for research in relation to war and industrial requirements. The lessons inculcated by these demonstrations are indeed great, and the invitations extended to scientific journalists by the Vice-Chancellors of the Universities of Leeds, Sheffield, Liverpool, and Manchester have been readily accepted and widely appreciated. This is an excellent movement which will bear much fruit.

Belgian Doctors' and Pharmacists' Relief Fund.

THE second year of the working of the Belgian Doctors' and Pharmacists' Relief Fund closed on the last day of November, and at the December meeting of the executive committee the position of the Fund was reviewed with an eye alike to the past and the future. Roughly speaking, and including the interests on investments, the Fund has received £20,000 since its inauguration, of which £10,000 remain at the disposal of the subscribers. In the early days of the war the disbursements of the Fund were largely employed in giving immediate help to Belgian members of the medical and pharmaceutical professions, their wives and dependents, as they arrived in this country flying before the invasion of the Germans. For these victims of brutal aggression the Fund found sums of money in supplement of lodging allowances, and to meet

other necessary and immediate expenses. A distribution of clothes purchased by the Fund was organised, and professional employment was found where possible, both for doctors and pharmaceutical chemists. Other sufferers were assisted with money in special directions, such as the payment of travelling expenses, or in accordance with individual needs, as they were represented to the executive committee through the Belgian organisations in England for dealing with the needs of refugees, doctors or pharmacists. Registration fees were paid in behalf of the Belgian medical men who were qualified to take a place on the British Register, and for whom some professional engagement made this step advisable or necessary. Latterly the disbursements in these directions have, of course, been much smaller; some of the doctors and pharmacists have joined the Belgian Army, some have left the country, and some have found professional employment in the United Kingdom, and have thereby been rendered more or less independent.

But in the meantime the executive committee of the Belgian Doctors' and Pharmacists' Relief Fund learned with considerable accuracy of the terrible conditions in which the Belgian doctors and pharmacists were existing who remained under German dispensation in Belgium. A Belgian committee, entitled the "Aide et Protection aux Médecins et Pharmaciens Sinistrés," was formed by prominent Belgian practitioners and pharmaceutical chemists, in order to investigate the plight of their professional brethren, and for nearly two years this body has been sitting regularly at Brussels under the presidency of Dr. V. PECHÈRE, with Dr. LARUELLE and M. A. DELACRE as secretaries and Dr. H. COPPEZ as treasurer. The officers of the Belgian association soon began to transmit regularly to the British Fund the *comptes rendus* of their proceedings, and it at once became obvious that the avowed object of the Fund would be more quickly and efficaciously achieved if money could be sent to Belgium for distribution in accordance with the thoughtful and even elaborate plans that were being carried out from Brussels. Through the intervention of Mr. HERBERT HOOVER, chairman of the Commission for Relief in Belgium, the Fund has been able to make grants of money to suffering doctors and pharmacists in Belgium with regularity for some months—indeed, this course accounts for the bulk of the disbursements. It is proposed to continue these grants, at the rate of £800 per month, for the next four months in any event, and the money at present in hand will admit of the same course being pursued until the close of 1917. Before that time, however, it will be necessary to make a further appeal, and with that end in view a brief statement of the activities of the Fund will be prepared for publication.

The committee must be congratulated not only on the successful organisation of a large and valuable Fund, but also on the extraordinary lowness of the expenses of management, as revealed in the statement of accounts published on p. 1069. This has been rendered possible by the devoted nature of the voluntary assistance received.

Annotations.

"Ne quid nimis."

FOOD REGULATION AND A FOOD MINISTRY.

THE coming into force this week of the limitation of courses at public restaurants is a reminder of one side of the Food Controller's work. For these regulations Lord Devonport's predecessor was responsible. We do not know whether they will go far to remedy the threatened shortage of foodstuffs. We readily admit that an excess of food is habitually taken by many people who are in a position to pay for it, and that food may be wasted in consequence of the large variety of dishes required at a single meal. Here we may remind our readers of Rubner's observation that in Berlin before the war 100 grammes of fat were thrown away daily from plates and dishes by every family. The manual worker, who with his family represents so large a proportion of the population, is alike the one whose use of foodstuffs is most important and on whom any imposed restriction must press most hardly. The Food Controller's work will, we hope, include propaganda of public education on the subject of food values, emphasising the foods which really feed, and on the prevention of waste. The canteens in munition works are serving as admirable object lessons, and meal times might perhaps occasionally be used as laboratory demonstrations. The supply of potatoes is at the moment a matter of earnest concern to the Board of Agriculture, and a Departmental Committee is closely considering the question of assuring a sufficient supply of seed potatoes for next year. There is still gross waste in the preparation of potatoes for food, and we are glad to note that at least one of the large London caterers has for some weeks stopped peeling potatoes before boiling them. A useful part of the potato is removed with the skin and most people can eat potato skin with advantage. War bread is making its appearance at the baker's and many people will wonder why they thought they would prefer white bread. Captain Charles Bathurst, the Food Controller's representative in the House of Commons, recently stated that the unfair competition of imported flour is receiving attention, that confectioners will have some license in regard to their white flour until stocks have run out, and that the artificial bleaching of flour by chemical process is being watched with a view to some action being taken. Sugar remains the vexed question of the moment. We confess to much sympathy with the suggestion that the only people who should be allowed to eat sweetstuffs are the children of the poor and the soldiers at the front: in the former to supplement a meagre diet, in the latter to provide a rapidly available supply of energy for sudden emergencies and the relief of fatigue. The supply of sugar to the retail seller is already controlled. We can only hope that the patriotic restriction of its unnecessary use may anticipate the enforcement of control on the retail buyer, a measure involving much administrative machinery and expense.

A Bill has been introduced by the Home Secretary "for establishing certain new Ministries and for the appointment of additional secretaries or under-secretaries in certain Government Departments, and for purposes incidental thereto." The Ministries it is proposed to appoint are a Ministry of Labour, a Ministry of Food, and a Ministry of

Shipping. For the moment the wide powers conferred upon the Food Controller only concern us. The powers and duties of the Food Controller are defined. He is to regulate the supply and consumption of food in such manner as he thinks best for encouraging the production of food. For these purposes he will have such powers or duties of any Government department or authority, whether conferred by statute or otherwise. By an Order in Council His Majesty may transfer to the Food Controller or authorise him to exercise or perform concurrently with, or in consultation with, the Government department or authority concerned. Further powers may be conferred on him by regulations under the Defence of the Realm Consolidation Act, 1914, and regulations made under that Act accordingly. The office of Food Controller is to cease to exist on the termination of a period of 12 months after the conclusion of the present war or such earlier date as may be fixed by His Majesty in Council. Apparently Lord Devonport's duties are confined to questions of distribution, the curtailment of supplies, and the encouragement of home production. The question of securing an increase in imported supplies is being left, no doubt, to the Ministry of Shipping, which is asked, amongst other things, to "control and regulate any shipping available for the needs of the country in such manner as to make the best use thereof."

THE PATHOLOGY OF GAS GANGRENE.

ON Monday afternoon last, at the Royal Society of Medicine, Sir Almroth Wright delivered a short address on the pathology of gas gangrene, in which he described the recent work done by himself and his coadjutors abroad, and by other workers in laboratories at home, the purport of his remarks being to show the relation of laboratory research to clinical experience and procedure. Throughout the lecture the behaviour of the *Bacillus perfringens* was in particular question, but much, even most, of the teaching had application to bacterial infection in general. The lecturer introduced his subject by saying that while it was necessary to study the behaviour of bacterial infection in the laboratory so as to arrive at the therapeutic courses to be adopted, it must be remembered that laboratory methods might mislead, because wrong emphasis might be laid upon some quite accurate piece of research, whereby a half-truth would become magnified into the whole story. For instance, the gangrene bacillus in ordinary circumstances is an anaerobe, but the statement that it can only grow in the absence of oxygen must be taken with large reservations when other than ordinary conditions prevail. It is now known that this bacillus can grow in air in the presence of animal or vegetable tissue, and this with extreme vigour, wherefore the use of peroxide as a dressing and the opening up of wounds to the air, though, so far as they go, such treatment is founded on laboratory research, are not necessarily efficacious. In considering what other therapeutic measures might be possible Sir Almroth Wright commenced by demonstrating that a local concentration of the bacteria of gas gangrene was extremely favourable to a spread of the infection, for where the bacteria, implanted either in broth or in blood serum, were allowed by gravitation to concentrate themselves, they spread much more rapidly, and with the production of gas, than where they were disseminated throughout the fluid. The first lesson which he drew from this demonstration of "avalanche" infection was that the presence in any wound of crypts, or of foreign bodies whose surface could supply a nidus for bacillary growth, was particularly favourable to a fatal spread of infection. Further laboratory experiments suggested that such a nidus was furnished by the recesses of cotton-wool, asbestos, or a rusty nail, just as much as by those of a carrot or a potato, indicating that in the laboratory experiments, where these vegetables had been used, the spread of the growth was not dependent on, or was only in some very indirect and secondary manner assisted by, the essential qualities of the vegetables. Having demonstrated that the anaerobic *Bacillus perfringens* can and will grow rapidly though air be present, the lecturer passed to the conditions of blood infection produced by the bacillus. Many charts were exhibited setting out the results of experiments proving that the bactericidal power of the blood is very great, but that in blood the same ominous spread follows concentration of the bacilli, and the lecturer suggested that two chemical factors were present when infection by the *Bacillus perfringens* took place. First, he said, the blood is made less alkaline by the action of microbes, while acidæmia favours their growth. Secondly, the antitryptic power of the blood is minimised by the disorganisation of the white corpuscles, and the destruction of these corpuscles also favours microbic growth; and he mentioned that Captain S. R. Douglas had shown in the Pathological Laboratory of St. Mary's Hospital that the antitryptic power of the blood being decreased, the spread of infection followed. The teaching arising out of Sir Almroth Wright's theory, and supported by numerous experiments, was therefore as follows. We have in gas gangrene two conditions—namely, the process of blood digestion by the bacillus producing acidæmia and the voiding of trypsin by the decomposition of the white corpuscles—whereby the bacillus is enormously assisted in growth; and all the time any mechanical or chemical assistance to concentration of the bacilli will have the same deleterious effect. In conclusion, Sir Almroth Wright detailed experiments made on rabbits and rats in support of what had started as a laboratory theory, and came to the conclusion that treatment by incisions and irrigation was justified by bacteriological research. In another column there will be found a summary of an interesting paper read before the Section of Surgery of the society by Miss M. H. F. Ivens, M.S., who has been working for two years at a French military hospital, the subject being on anaerobic wound infection. In this paper 107 cases of gas gangrene, regarding the flora as multiple and not limited to the *Bacillus perfringens*, were analysed. It is interesting to note that the factors of importance found in the production of these cases agree very well with Sir Almroth Wright's views.

THE BACTERIOLOGY OF WHOOPING-COUGH.

THE recent researches of Mme. Chievitz and Dr. A. H. Meyer,[1] both of Copenhagen, into the bacteriology of whooping-cough have thrown light upon several important points in the natural history of that disease. It is due, as is well known, to infection by the minute *Bacillus pertussis* discovered in 1906 by Bordet and Gengou. This microbe may be cultivated from the sticky muco-purulent expectoration brought up at the end of the paroxysms of coughing. Grown on

[1] Annales de l'Institut Pasteur, Paris, 1916, xxx., 503.

Bordet and Gengou's special medium (gelatin, potato, and blood) in Petri dishes, the bacillus forms small polished and shining colonies that are highly characteristic. Like other investigators, Dr. Chievitz and Dr. Meyer have found it impossible to make the diagnosis of whooping-cough by the microscopical examination of stained smears of the sputum. A certain diagnosis can be attained only by culture of the *Bacillus pertussis*, a matter demanding at least two days. Their researches, based on the examination of 156 patients, have brought out the fact that after a patient has whooped for a month his sputum is free from the *Bacillus pertussis*—in other words, he may be regarded as no longer infectious to other persons. Dr. Chievitz and Dr. Meyer could cultivate the bacillus from the sputum of almost every patient during the first two weeks of the cough, reckoning the cough to precede the appearance of the characteristic paroxysms and whooping by a week. The microbe was isolated in 24 out of 33 cases in which the cough had lasted two or three weeks, in 9 out of 27 cases in which it had lasted from three to four weeks, and in 3 out of 27 in which it had lasted for from four to five weeks. A positive result was obtained in only 1 out of 42 patients who had coughed for over five weeks, and in this instance only a single colony was found. Acting on this discovery, the French Ministry of Public Instruction issued an Order in March, 1916, permitting children with whooping-cough to return to school after a month of whooping. Dr. Chievitz and Dr. Meyer also describe a new and simple method of obtaining the bacterial culture for purposes of diagnosis in cases of whooping-cough or suspected whooping-cough. It consists in getting the patient to cough, if necessary by depressing his tongue with a spatula, while an open Petri dish containing the culture medium is held 4 inches away from his mouth. In this way the patient inoculates the medium directly with droplets of his sputum. Collected and inoculated in this way the *Bacillus pertussis* grows with unusual strength and readiness. The second part of the work of Dr. Chievitz and Dr. Meyer deals with the diagnosis of whooping-cough by agglutination tests and the method of deviation of the complement. They find, as others have found, that agglutination tests are not practicable in whooping-cough. But the method of examining for deviation of the complement gave a positive result in 106 out of 112 patients. It takes some weeks to develop, being present in a quarter of the patients who had had the cough for a fortnight, in three-quarters of those who had coughed for three weeks, and in all those who had coughed for from five to eight weeks. After this time it slowly disappears again, but may be met with, apparently, even after the lapse of several years. Dr. Chievitz and Dr. Meyer argue that these results furnish additional proof that the bacillus of Bordet and Gengou is the cause of whooping-cough.

WATER-SUPPLY AND DRAINAGE OF SYDNEY.

NOTWITHSTANDING the outbreak of the war in August, 1914, which affected the activity of building operations throughout the Empire, there were as many as 8338 new buildings brought to completion at Sydney, New South Wales, in the 12 months ending June 30th, 1915. The total population of the area supplied by the Water Board of the city, including suburbs, is estimated at 878,790, and the daily water consumption averages 40·86 gallons per head. Deacon's water waste detection meters have continued to give satisfactory results; in one district the waste was reduced from 16·9 to 0·9 gallons per head per day, and in another from 22·3 to 0·2 gallons. The use of galvanised iron for cisterns has been forbidden by the Board, as this material developed many defects and proved wasteful. The Metropolitan Board of Water Supply and Sewerage has now a total length of 972 miles of sewers under its control, an addition of 42 miles having been constructed during the year ending June 30th, 1915. The population provided with sewerage facilities is estimated at 623,795, occupying 124,759 houses. The quantity of sewage pumped was 2590 million gallons, at a cost of £3 1*s.* 10*d.* per 1,000,000. Purification of the sewer air escaping from the main ventilating shafts was carried out, as an experiment, by means of a solution of chloride of lime distributed as a fine spray in one of the main ventilating shafts, 3 feet in diameter. Four sprays were used eventually, which gave excellent results up to a velocity of five miles per hour of air current. The old sewerage works of Sydney were designed on the "combined system," surface drainage as well as sewage being carried off and discharged into the harbour through five main outfalls. Owing to the consequent pollution of the harbour, with its direct menace to health, a Commission was appointed to inquire into the best means of remedying this evil. The result has been the construction of a new system of drainage, on the "partially separate" principle, which intercepts all sewage from the gravitation zone—that is, all over 40 feet above high-water mark; sewage from below this level is pumped into the gravitation system. There are three main outfalls: the northern, into the Pacific Ocean at Ben Buckler Point, which takes all the sewage that was previously discharged into the harbour; the southern, from the rest of the city and the southern suburbs, on to the sewage farm at "Webb's Grant"; and the western, for the western suburbs, discharging at the Rockdale end of the sewage farm. These works have been constructed by Government and transferred to the Metropolitan Board on completion. The Report,[1] which is signed by the President, Mr. W. J. Millner, is very fully illustrated with diagrams, maps, and statistical tables.

THE CHEMISTRY OF THE VITAMINES.

THE notes on the chemistry of the vitamines in recent numbers of the *Journal of Biological Chemistry* of Baltimore, include work done in this direction, mainly by Professor McCollum and his associates, which is of a very interesting character. They hold that in a diet sufficient for growth and well-being, and particularly for healthy reproduction, there must be not only the protein, fat or carbohydrate and mineral matter, which we have for years considered necessary, but also two further factors. One of these they call fat soluble A, found in some natural fats but not in all, and another, water soluble B, the vitamine recognised by Funk and others in their work on beri-beri and widely distributed in many natural foodstuffs, such as milk, eggs, meat, and vegetables. Clearly there is no shortage of either principle in the ordinary mixed diet, but it is observed that a diet to be suitable for the function of reproduction must contain more vitamines than are necessary merely for

[1] Sydney: W. A. Gullick. 1915. Price 5*s.*

the purposes of growth. The vitamines, it is concluded, are not formed by the mother, so that none can reach the infant unless taken in by the mother. The necessary factors for health and development were supposed to be present in a diet of wheat embryo. Yet young rats on a diet of wheat embryo alone do not grow; but they made some advance if 40 per cent. of the wheat embryo were replaced by dextrin, more advance if the wheat embryo was first extracted with ether and its oil mostly removed, more still if calcium lactate and sodium chloride were added to this diet, but their growth was doubled if they then got 5 per cent. extra of butter-fat, which is rich in fat soluble A. Other oils did not produce this conspicuous effect. Why did not the rats thrive on their diet of wheat embryo? Professor McCollum concludes that it was because the embryo contained a toxin, a toxin conspicuously manifesting its effect only when a diet was given that was barely sufficient for subsistence; with a more generous diet the other elements present improve nutrition and exalt resistance. To this wheat toxin swine are particularly susceptible, rats less, and chickens hardly at all. Swine fed exclusively on wheat show symptoms of a disorder indistinguishable from beri beri, whether by symptoms or appearances, and full histories of their symptoms are given, with pictures of the animals and micro-photographs of sections of their spinal cords. This disease was cured by adding to the diet of the affected animals milk, alfalfa meal, or meat scraps, probably, it is held, because these add to the ration more fat soluble A and more salts, particularly calcium salts. It is, however, not easy to understand why the animals of Experiment 1 (vol. xxv., 2. p. 250) failed only in the eleventh month after growing to 225 lb., while those of Experiment 3 failed in the seventh month before reaching 200 lb., though on the same diet with 3 lb. of milk daily in addition. Lard does not appear to contain as much vitamine as does butter (Funk), for the œdematous conjunctivitis which seems to be recognised as the deficiency disease due to want of fat soluble A, is better antagonised by adding butter-fat to the diet than by adding lard. All the work is very suggestive, though more researches will be necessary before definite conclusions are arrived at.

EPIDEMIC INFECTIVE JAUNDICE AT THE ITALIAN FRONT.

IN a communication made to the Medico-Chirurgical Society of Pavia, and published in *Il Policlinico* (Practical Section, October 22nd, 1916), Professor Moreschi and Professor Carpi, majors in the Army Medical Service, draw attention to a considerable number of cases of jaundice among soldiers coming from the front on the Isonzo. The frequency of such forms of jaundice had already attracted the attention of Frugoni and Cannata, and other observers, who attributed its causation in the majority of instances to the organism of paratyphoid B. The latest observers made experimental researches during last August on 56 cases, in some of which there were prodromal symptoms with rigors and sharp rise of temperature sufficiently characteristic to differentiate them from simple catarrhal jaundice. Labial herpes was present in the majority of cases, and it was also noticed that there was no direct relation between the intensity of the jaundice and the gravity of the illness. Another sign which was significant was furnished by the lymphatic system, for swelling of moderate degree frequently occurred in the glands of axillæ and groins. The stools were usually deficient in colouring matter, often greyish-white and of chalky consistency, while in other cases they remained coloured. The course of the malady was generally benign, but in some instances there were relapses with sudden rise of temperature in cases which had for some time become completely afebrile. Agglutination tests for typhoid and paratyphoid A and B were made in 33 of the patients with the following results: 30 negative reactions for typhoid, 27 negative for paratyphoid B, and 30 negative for paratyphoid A. Agglutination gave positive results for typhoid in two patients with a dilution of 1–20, in a third with 1–40; for paratyphoid B in one case with a dilution of 1–80, in three cases with 1–40, in two with 1–20; for paratyphoid A, in one case with a dilution of 1–60, in three cases of 1–40. Hæmoculture in four febrile cases was negative in all. Bacteriological examination for typhoid and paratyphoid in 14 cases gave all negative results. Blood examination made in a few cases failed to reveal spirillary forms. The observations of Hübener and Reiter having led them to believe that a spirochæte was the cause of Weil's disease, Moreschi and Carpi performed a series of experiments with a view to discovering a similar organism in their cases of epidemic jaundice among the soldiers. With three patients they inoculated 1 c.c. of blood taken directly from the arm into the peritoneum of a group of four guinea pigs for each patient, with the following results. No symptoms of the disease were noticed in the two groups from the first two patients, but in two of the animals inoculated from the third patient there occurred on the tenth day an icteric tint of the skin, conjunctivæ, and mucous surfaces, with bile pigment and albumin in the urine. Pathological examination of these two animals revealed, besides icteric changes, considerable enlargement of the liver and punctiform hæmorrhages in the intestines, but no spirochætic organisms were found either in the blood or in smears prepared from the various organs. When, however, an emulsion of the liver of these two animals was inoculated into the peritoneum of six other guinea-pigs, fever, jaundice, and albuminuria occurred, with death on the fifth to eighth day from collapse. In the liver, kidney, spleen, lymphatic glands, and blood Professor Moreschi and Professor Carpi found numerous very thin filaments stained bluish-red by Giemsa, 4–6 μ in length, with large curves usually not greater than 2–3 μ, isolated or in pairs, or even agglomerated in groups. This latter formation was especially observed in the blood of the right auricle taken immediately after death. Several of these forms presented one extremity curved on itself like a loop. True nodulated forms, such as are described by Hübener and Reiter, were not found. These researches tend to show that spirochætosis may play an important part in the genesis of the epidemic jaundice observed among soldiers at the front, but the mode of its transmission can only be determined by future observations.

THE subject of toxic jaundice in munition workers and troops—its origin, symptoms, pathology, treatment, and prophylaxis—will be discussed at a joint meeting of the Sections of Medicine, Pathology, and Epidemiology of the Royal Society of Medicine, on Jan. 23rd, at 5 P.M.

THE LANCET, VOL. II., 1916: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 30th will be ready early in the New Year. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C., when a copy of the Index and Title-page will be supplied free of charge.

REPORT OF THE LOCAL GOVERNMENT BOARD FOR 1915-16.

WE have received Parts I. and III. of the forty-fifth annual report of the Local Government Board, which, with a view to economy, has been further reduced in size. This reduction in size appears to have led to acceleration in preparation, because the present report, dated September, 1916, has made its appearance only seven months after that for the previous year (1914–15).

PART I.

Administration of the Poor-law.—We are informed that the total number of persons in receipt of Poor-law relief in England and Wales was considerably smaller at the end of the year 1915–16 than at the end of the preceding year, there having been a reduction of no less than 71,051 such persons. During the year under review there was a continuous decrease in pauperism until the second week of October, when the numbers stood at 561,889. From that date the numbers rose to 567,618 in the third week of December, after which they again decreased during the remainder of the financial year, with the exception of a slight rise in February last. The figures relating to the numbers of casual paupers relieved in England and Wales on Jan. 1st last and the previous four years are interesting and may be quoted. In 1912 there were 9732; in 1913, 8882; in 1914, 7568; in 1915, 5416; in 1916, 3576.

Distress amongst professional classes.—In the section of the report dealing with special work arising out of the war it is stated that the Professional Classes Subcommittee has continued to deal with the problem of distress amongst the professional classes, and that during the year grants from the National Relief Fund amounting to £26,409 have been made on the recommendation of this subcommittee to benevolent societies and similar associations representative of the different professions affected.

War refugees.—During the year 1915–16 the philanthropic and other agencies which welcomed the Belgian refugees to this country in 1914 have continued their work of succouring these unfortunate persons. Many of the refugees have succeeded in finding work and have become able to support themselves, while others, who on arrival were possessed of means, have exhausted their resources and have had to avail themselves of assistance. A list of the refuges established in London was given in the White Paper (Cd. 7763), which also showed the number of refugees who had been admitted to the several institutions up to Dec. 31st, 1914. The total number of refugees received in the refuges from the date of their establishment until March 31st, 1916, was 114,934.

Employment of sailors and soldiers disabled by the war.—The Committee upon the Provision of Employment for Sailors and Soldiers Disabled in the War, which was appointed by the late President of the Local Government Board, Mr. Herbert Samuel, in February last, under the chairmanship of Sir George H. Murray, reported in May, recommending that a Central Committee should be appointed by His Majesty's Government to look after sailors and soldiers disabled in the war, and that their duties should include: (*a*) The restoration of the man's health, where practicable; (*b*) the provision of training facilities, if he desires to learn a new trade; and (*c*) the finding of employment for him, when he stands in need of such assistance. In accordance with these recommendations the Statutory Committee of the Royal Patriotic Fund Corporation, established under the Naval and Military War Pensions, &c., Act, 1915, was specifically charged with the function of making provision for the care of disabled officers and men after they have left the service, including provision for their health, training, and employment.

PART III.

Tuberculosis.—It is satisfactory to learn that, notwithstanding the difficulties created by the war, some progress has been made with the development of approved schemes for the treatment of tuberculosis, and that a number of institutions, the erection of which had been undertaken previous to the war, have been completed and brought into use. Up to April 30th, 1916, 288 residential institutions, containing 11,227 beds, and 355 tuberculosis dispensaries had received the approval of the Local Government Board. The last issue of this report contained a statement on the arrangements which had been made for the provision of residential treatment for officers, non-commissioned officers, and men about to be discharged from the Army on account of tuberculosis who are not insured under the National Insurance Acts and who are not in a position to obtain treatment at their own expense. These arrangements have now been extended to similar cases amongst officers and men of the Royal Navy and the Royal Marines, as well as to soldiers whose homes are not in the United Kingdom. With the view of securing that men suffering from tuberculosis are not admitted into the Army, a circular letter was issued by the Local Government Board on May 9th urging local authorities to allow their tuberculosis officers to assist the military authorities in the examination of recruits and in other ways as may be desired. Regulations were also issued on May 13th requiring all medical officers of health to send to the Army Council periodically lists containing the names and other specified particulars of all male persons of certain ages who have been or may be notified as suffering from tuberculosis. The regulations provide that all information received in pursuance thereof shall be regarded by every person who has access thereto as confidential. It is, of course, very important that persons suffering from tuberculosis should not be called upon to undertake military service, and the arrangement outlined above should go far to secure this end. Up to April 30th the appointment of 257 tuberculosis officers had received the approval of the Local Government Board, and of these 110 had at that time resigned, either temporarily or permanently, to render war service. The total amount of maintenance grant paid during the year ended March 31st was £218,376 18*s.* 5*d.*, and the total grants paid in respect of expenditure incurred during the financial year 1914–15 amounted to £176,004 7*s.* 1*d.*, inclusive of the grants on account paid during the year.

Infectious diseases.—In the section devoted to infectious diseases an interesting table is given showing the notifications for 1915 and the three preceding years of the more important infectious diseases amongst the civilian population. This table shows that there has been a decrease in the number of notified cases of most of the diseases with the exception of cerebro-spinal fever. The figures for this disease may be given. In 1912, when only partial returns were available, 272 cases were notified; in 1913, 304; in 1914, 315; while in 1915 there were no fewer than 2566. Special investigation of the disease was instituted by the Local Government Board, the results of which have been published in a report dealing with the matter.[1] During the first six months of 1915 measles was very prevalent, and caused 12,414 deaths, as against an average of about 11,000 per annum during recent years. It may be remembered that an Order was issued by the Board on Nov. 27th, 1915, making measles and German measles compulsorily notifiable, requiring medical officers to take steps for investigating the source and for preventing the spread of infection, and authorising local authorities to provide medical (including nursing) assistance for the poorer inhabitants of their districts. Ninety cases of small-pox were notified during 1915, and there was little spread of the disease in that year. In the spring of 1916, however, small outbreaks of the disease occurred in South Wales, South Lancashire, and in other parts of the country. Local authorities generally took energetic measures to limit these outbreaks by prompt isolation, vaccination of contacts, &c., and the

[1] Reports of the Local Government Board on Public Health and Medical Subjects (New Series, No. 110), reviewed on p. 1049 of THE LANCET, May 20th, 1916.

medical inspectors of the Local Government Board were constantly engaged locally in assisting the authorities to discover the source of infection and to limit its spread. By June, 1916, the number of cases, which had averaged 33 for each of the four previous months, had become reduced to 6. In view of the possibility of a recrudescence of the disease, the Local Government Board have reviewed the isolation hospital accommodation available for small-pox, especially in the counties which have been particularly threatened by the disease, and they are of opinion that, in spite of the general restriction on capital expenditure, it is important that some accommodation, which is capable of extension, should be provided for every area, so that any case that may arise can be promptly isolated. In certain instances county councils can most readily and economically provide the necessary accommodation, and they have been informed that the Board is willing to issue orders under the Public Health (Prevention and Treatment of Diseases) Act, 1913, constituting them the authority for this purpose.

Vaccination.—The latest statistics have not yet been tabulated, but there is no reason to suppose that the decline in vaccination has been arrested. We are told that it may be assumed that more than half the children now born escape vaccination, and that by far the greatest proportion of children unvaccinated are exempted by a declaration of conscientious objection to vaccination made by their parents. Comment is needless. We only hope that the consequences which are bound sooner or later to follow the present neglect of this important preventive measure may be deferred until after the war, otherwise the consequences to the nation may be of a very serious character.

Prevention and treatment of venereal diseases.—The findings of the Royal Commission on Venereal Diseases are, of course, well known to readers of THE LANCET, as is also the fact that the Government has made provision for the refunding of 75 per cent. of the cost of schemes which have been approved by the Local Government Board. The prevention of these diseases is a very important public health problem, and we hope the measures now being adopted may do something to combat an evil that has been too long neglected.

Medical officers on military service.—In February last, at the request of the Central Medical War Committee, the Local Government Board obtained from each local authority a return of the medical men employed by them, giving particulars of those already serving with the forces, those under the age of 45 who could best be spared if a further call were made, and what arrangements could be made for the discharge of their duties during their absence. The replies showed that the number of medical men wholly or partially employed by local authorities who were then serving with the forces was about 400, and indicated that it was unlikely that any further considerable number could be spared without risk to the public health of the country. At the present time about 250 medical men who ordinarily give their whole time to posts under local authorities are on military service, and about the same number of medical men under 45 years of age holding such posts are still engaged on their civil duties.

Maternity and child welfare.—During the year under review the Local Government Board has continued its efforts to induce all local authorities to adopt measures for the promotion of maternity and child welfare, and schemes have now been approved for nearly all the large urban districts, a considerable number of the smaller districts, and for the majority of the counties of England and Wales. In connexion with this work, grants from the Imperial Exchequer have been paid during the year amounting to about £42,000—viz., £33,500 to 311 local authorities and £8500 to 93 voluntary agencies. Nearly 400 whole-time and over 600 part-time health visitors have now been appointed by local authorities, and a considerable number of salaried health visitors have also been appointed by voluntary societies working in coöperation with local authorities. Over 300 municipal maternity and child welfare centres have been established and more than 350 voluntary centres. In many of these regular medical supervision is available. It is satisfactory to learn from this report that the number of untrained midwives is steadily diminishing throughout the country. In sparsely populated rural districts difficulty is sometimes experienced in filling the places of untrained midwives by certified women. Excellent work has been done by county nursing associations in securing the provision of nurse-midwives in such areas through the medium of district nursing associations, and during the past year the Local Government Board has paid grants amounting to £2900 to 23 county nursing associations in aid of the midwifery service of the district associations.

INDUSTRIAL RESEARCH AT THE UNIVERSITIES.

IN THE LANCET of Oct. 21st last we referred to the interesting demonstrations which were given in the Universities of Leeds and Sheffield of the facilities which the great technological schools of the universities are offering for carrying out scientific research. Similar demonstrations have since been given at the Universities of Liverpool and Manchester, and last week a circle of scientific, technical, and trade journals, acting as as section of the Institute of Journalists, visited the laboratories, workshops, and machine sheds which form an important part of the curriculum amply provided in these teaching centres.

At Liverpool, in the unavoidable absence of the Vice-Chancellor through illness, Professor Herdman welcomed the visitors, and in a brief address explained the work of the various departments of the University. They were then taken through the laboratories and technical sections, where the professors gave short and instructive references to the kind of work performed. The School of Tropical Medicine was visited and proved of great interest. A large amount of routine work is being done in connexion with dysentery, malaria, and other tropical diseases among soldiers invalided from the Expeditionary Forces, and the bearing of this work upon the progress of commercial development in the tropics was explained. In the chemistry department the preparation of various drugs was in progress, and considerable attention has been given to the making of dye-stuffs and to the testing of munition materials. Researches have also been conducted on the preparation of β-eucaine, salvarsan, phenol, salicylic acid, picric acid, atropine, and dye-stuffs of the phthalein and anthracene groups. The bio-chemical department showed the important services it was rendering in regard to many technical problems connected with medicine, bacteriology, agriculture, fisheries, and the food, milk, drug, and leather industries. The bacteriological laboratory is recognised by the War Office as the centre for Liverpool, Birkenhead, and other places for the diagnosis of cerebro-spinal fever among the troops, while examinations are made there also in connexion with cases of dysentery, typhoid, and paratyphoid. The pathological department has issued during the last two years over 10,000 reports upon materials from wounded or sick soldiers. The work done under the Faculty of Engineering was next illustrated, and there were many interesting things to be seen in the departments of mechanical engineering, applied electricity, refrigeration, and so forth, all prodigiously activated by the great demands of the war.

At Manchester the visitors were received by the Vice-Chancellor, Sir Henry Miers, in the Council Chamber of the University, who gave an interesting summary of the work connected with the war that was being done by the faculties. The University authorities, he said, had given a very ready response to the Government in carrying out researches in many directions, and he expressed the view that a strong effort should be made to impress upon the legislature and the public the great importance of the application of science to industry. The visitors were most impressed by the magnificent School of Technology which Manchester possesses. It is claimed to be the finest example of a technological school in the kingdom, if not in the world, and it is interesting to add that, apart from administration and finance under the control of the City Council, the work of the Faculty of Technology is controlled by the Senate of the University through the Board of the faculty. As is pointed out, the School of Technology has thus a more democratic form of government than any other University institution in this country, its governing body being the Manchester City Council. A tour round the various departments soon convinced the visitors of the special service which many members of the University had been able to render both

in an advisory and experimental direction in connexion with the war. Researches of the most important character have been undertaken in the departments of engineering, chemistry, metallurgy, physics, textiles, electro-technology, public health, and pathology, while members of the staff have been called to work for the Admiralty, the War Office, the Local Government Board, the Board of Trade, and other Government departments. The demonstrations were of a most interesting character, and the general impression carried away was that researches conducted in the University are bound to have an important influence upon the prosperity of British industry.

It is quite clear that in the interests of the country industrial research must be given a prominent place in the future curriculum of our universities and must receive every encouragement from the State.

THE CONTROL OF VENEREAL DISEASES.

National Council for Combating Venereal Diseases.

THE National Council for Combating Venereal Diseases has issued an interim report detailing its recent activities in connexion with the Army and with the medical profession. The Council has been in communication with the Education Committee of the London County Council, and conferences have been arranged with the representatives of the principal societies dealing with secondary education among boys. In view of the fact that treatment centres will be opened in Greater London and many counties and provincial centres at the beginning of the New Year, the Council proposes to undertake widespread propaganda, to which further reference will be made.

City of Liverpool Scheme.

Dr. E. W. Hope, medical officer of health of Liverpool, has sent us a copy of a scheme drawn up by himself and approved by the health committee of the city council and by the port sanitary and hospitals committee. It is first stated that a systematic examination of stillborn infants by the city bacteriologist has shown that syphilis was a cause of the stillbirth in a very large proportion of cases. To carry out the recommendations of the Local Government Board with regard to the control of venereal diseases a joint committee has been appointed by the city council consisting of representatives of the two committees mentioned, together with two additional medical men nominated by the Liverpool Medical Institution to represent hospitals and general practitioners respectively. The University has instituted a post-graduate course in modern methods of diagnosis and treatment conducted by Dr. F. P. Wilson, lecturer on venereal diseases. Professor J. M. Beattie, city bacteriologist, has arranged for reports on material from patients suspected to be suffering from venereal disease, and a number of treatment centres are also being prepared. The Royal Infirmary is providing 20 male beds under the honorary charge of Dr. F. P. Wilson, and a resident medical officer will be appointed, who will rank as house surgeon and divide his time between the venereal departments and the skin clinic, while two qualified non-resident clinical assistants, one of each sex, will be paid on the basis of time. The provision of female beds affords for the moment the principal difficulty, but the approximate cost of necessary alterations at the infirmary is estimated at £1100. Professor E. E. Glynn, pathologist to the infirmary, will carry out pathological investigations, for which a yearly sum of £105 is budgeted, the expenses of the city bacteriological department being estimated at £300 per annum. The cost of salvarsan or its similars is estimated at £150 per annum for 700 injections. At the Royal Southern Hospital it is proposed to build an annexe to accommodate 16 patients, the same number of each sex. The Children's Infirmary, the Samaritan Hospital, and the Shaw Street Hospital for Diseases of Women are willing to continue as heretofore the treatment of sequelæ of venereal disease, but no lines of extension have yet been formulated. The David Lewis Northern Hospital will continue its present work. The in-patient treatment of gonorrhœal ophthalmia of infants is already provided for at the St. Paul's Eye Hospital; others attend at the Eye and Ear Infirmary, Myrtle-street. The cost of this work is budgeted at £1000. At the Skin Hospital, Pembroke-place, it is estimated that the substitution of salvarsan for treatment on the old lines will raise the cost of dealing with the present number of patients from £400 to £2000. The Liverpool Diocesan Association for Preventive and Rescue Work has put in an important claim to the treatment in one of their homes of young girls who would otherwise be sent to the lock wards of the workhouse in order to combine the best medical treatment with moral reclamation. They estimate the yearly cost at £500, with initial expenses of £200, and suggest an honorarium of £60 for the lady medical officer. In an appendix to the printed scheme Dr. Hope give a series of forms and circulars suggested for the practitioner's use.

The Action Taken in Belfast.

At a meeting of the medical profession of Belfast and neighbourhood, called conjointly by the secretaries of the Ulster Medical Society and the Ulster branch of the British Medical Association, and held in the Medical Institute, Belfast, on Dec. 15th, Mr. Robert Campbell, President of the Ulster Medical Society, being in the chair, the following resolutions were passed after a long and full discussion:—

That the medical profession of Belfast and neighbourhood take steps to have a branch of the National Council for Combating Venereal Diseases formed.

That the medical profession of Belfast and neighbourhood strongly urge, from their professional knowledge of the disastrous effects of venereal diseases in every department of medical practice, that the most modern scientific methods be made more freely available for their diagnosis and treatment. They think the time is now ripe for the Local Government Board in Ireland to draw up regulations (after consultation with the medical profession) so that local health authorities may suggest schemes for the control and prevention of venereal diseases as has already been done by the Local Government Boards of England and Scotland.

A committee was then appointed to take the necessary steps to carry out the above resolutions. It is expected that a deputation of medical practitioners and members of the public who are anxious to give their help and assistance will wait on the Lord Mayor of Belfast, asking him to summon a meeting for the consideration of the whole question.

Compulsory Measures in Bavaria.

The Munich Medical Society recently appointed a Commission to study the administrative measures necessary to deal with the venereal diseases in the kingdom, and a summary of their proposals appears in the *Münch. med. Wochenschr.* of Nov. 28th.

1. Notification shall be compulsory, both in institutions and in private practice, for gonorrhœal infection of the genito-urinary system, conjunctiva, and rectum, for soft sore, for syphilis in its primary and secondary stages, for syphilis in its tertiary stage if locomotor organs, visible mucous membranes, sense organs, or central nervous system are affected, and for congenital syphilis.

2. Any change in the patient's address must be notified.

3. The doctor must also notify in cases where the patient seeks his advice on account of another illness whether or not treatment is given, and even when the patient refuses to be treated.

4. The notification must be made within three days in writing on special post-free forms.

5. The conclusion of treatment must also be notified, including a statement as to whether, and if so when, a second examination or course of treatment is required.

6. Persons who feel themselves aggrieved by the statement that they are suffering from venereal disease are to be referred to an official medical officer, who shall assess the claims for the guidance of the court to which the patient appeals.

7. A special department under the direction of an expert doctor shall keep lists of all patients notified, with the necessary remarks regarding further examination and treatment. This department shall have the right to warn a refractory patient and to insist on treatment, if necessary by sending him to an institution. It shall have the right also of sending into an institution patients whose treatment does not seem assured outside. Grounds for this may arise in connexion with housing conditions, occupation, neglect or refusal of treatment, and finally severity and infectiousness of the particular case. The notifying doctor can suggest institutional treatment.

8. All doctors and officials are bound to secrecy in regard to cases of venereal disease which become known to them. A copy of all notifications, limited to forms containing name, place, and day of birth, is to be sent to the proper authority at the patient's place of birth for registration.

9. All members of a household who have with some degree of probability had sexual relations with an infected member of it may be brought to the notice of the notifying or treating doctor for examination and treatment. This instruction must be omitted if any overwhelming disadvantage in any other direction were to be feared.

10. Persons also who are not under medical treatment, but in whom suspicion of the existence of venereal disease arises, may be sent to be examined and if found necessary, treated.

11. With the military or naval authority arrangement is to be made that persons requiring observation or treatment be notified on their discharge from the service.

12. Non-medical persons shall be forbidden to treat venereal diseases or to sell remedies for their treatment. Such remedies are to be entered on a list, which shall be kept up to date, and dispensed in pharmacies solely on the prescription of a qualified doctor, in the quantity prescribed, and only once.

15. Arrangements must be made that all venereal patients are sufficiently treated. As far as this is not already arranged by insurance societies and sick clubs, care should be taken that poor patients are treated free of cost, if necessary in institutions, and that loss of wages is, as far as possible, made good, except when treatment is refused short of compulsion.

The Commission has drawn up the regulations for putting these sweeping compulsory measures into force, and it is probable that they will shortly receive official sanction.

MEDICINE AND THE LAW.

Private Rights and Municipal Authorities: a Question of Damage.

AT a recent meeting of the Chard town council a letter was read from 11 ratepayers who wrote: "We understand that we, who have suffered pecuniary loss through ourselves or members of our family having taken typhoid fever as a result of the contaminated water-supply of the borough, have a claim against the council for reimbursement of our loss." Some discussion took place and the matter was referred to the finance committee. As the persons claiming compensation from the town council have clearly been advised that they have grounds for doing so owing to neglect on the part of the council in performing its duties towards them, discussion of the facts upon which the Chard ratepayers would have to rely in seeking to establish the liability of the local authority would be out of place. It is enough to point out the importance of claims of this kind, if made, being pressed home, so that both parties, and others in similar positions, may be made aware of their relative rights and obligations. In such a case as that indicated in the letter quoted above it is evident that if disease is proved to have been the result of defective public sanitation, private precaution would not have prevailed to prevent it. Individual effort can only be directed towards stimulating the efforts of the public body entrusted with that task, towards strengthening the hands of the medical officer of health in the performance of all his duties, and towards enforcing full recognition of the power of sanitary science to protect the community. Medical officers of health and the officials connected with them do not work always under easy conditions, and they require the support of public opinion as well as of those members of the local authority who are in sympathy with their efforts.

A Police-court with a Psychopathic Laboratory.

The November issue of the *Medico-Legal Journal* (New York) contains some interesting notes upon the "Psychopathic Laboratory" recently instituted in connexion with the Municipal Court of Chicago. The judges of the Morals, Domestic Relations, and Criminal Branch Courts and of the Boys' Court refer all defendants to this laboratory, and sometimes witnesses who are suspected of being insane, feeble-minded, or afflicted with other mental ailments. The history and circumstances of each case are taken into consideration in the laboratory, and physical examination of the subject is combined with neurological, psychological, and other tests which, it is claimed, are standardised through application to thousands of normal children of various ages. No doubt there is ample work for such a laboratory in the court to which it is attached, and the experiment should be watched with interest by many in our own country who feel that no small number of feeble-minded persons are every year punished as criminals and denied all hope of improvement and reform.

The Cornwall Insurance Committee and Unregistered Dentists.

At the last meeting of the Cornwall Insurance Committee Mr. A. P. Trinder moved a resolution to the effect that it was contrary to the principles of the Insurance Act, and inimical to the interests of the insured themselves, that patients requiring dental treatment should be sent to "unregistered" dentists. Dr. A. E. Permewan seconded this. Mr. Tabb proposed that the words "unless the circumstances are exceptional" be added as an amendment. The speaker stated that the Sanatorium Committee had always refused or rejected estimates from unregistered "dentists," except in the case of a patient who lived in an "outlandish part of the county," and here the offer was accepted, "provided the work was done to the satisfaction of the doctor in charge of the case." This, he added, "placed the responsibility on the panel doctor." The medical representatives explained to the meeting that there was no part of the county outside the reach of a registered "dentist." They added that 99 medical men out of 100 would refuse to act in conjunction with unregistered men, and if any did so the General Medical Council would soon interfere. One of the members remarked that the Insurance Committee "might themselves be liable if anything happened by their sending a case to an unregistered dentist." Eventually the amendment was carried by 22 votes to 10.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Committee was held at THE LANCET Office on Dec. 14th, when the position of the Fund at the close of the second year of working was considered, and the following balance-sheet, duly audited, was presented by Dr. H. A. DES VŒUX, the honorary treasurer, being a cash account of the Fund from Dec. 1st, 1915, to Nov. 30th, 1916:—

Receipts.	£	s.	d.
Dec. 1st, 1915:			
Balance	15,608	12	0
Nov. 30th, 1916:			
Donations	929	19	7
Interest	803	8	0
Total	£17,341	19	7

Payments.	£	s.	d.
Relief	6,635	5	9
Clothes	105	14	4
Administration expenses...	12	14	3
	6,753	14	4
Balance at bank, £2649 3*s.* 7*d.*; Treasury Bills at cost, £7889 1*s.* 8*d.*	10,588	5	3
Total	£17,341	19	7

Messrs. Crewdson, Youatt, and Howard, chartered accountants, have examined the above account with the books and vouchers of the Fund and have certified it to be correct.

The treasurer gave a general summary of the financial circumstances and showed that the total donations to the Fund up to Nov. 30th amounted to £19,500 6*s.* 5*d.*, including the sums collected by national committees in Scotland and Ireland; the interest on Treasury Bills and money on deposit amounted to £826 14*s.* 6*d.*; while the financial position on the day of the meeting was that £10,000 remained in hand after sending the sum of £800 per month for a considerable period to Belgium for the relief of doctors and pharmacists and their wives. On Nov. 18th Treasury Bills for £8000 were bought, which mature in February. From the beginning of June up to the end of November £627 2*s.* 8*d.* was received, and during this period £4904 was expended, £4800 of this being the *mensualités* sent direct to Belgium. A little over £100 had been distributed in small sums in England for the relief of Belgian doctors and pharmacists or their wives or dependants during the period.

The Committee, on considering the financial statement, decided to continue the *mensualités* to Belgium for the ensuing four months, though aware that at that rate of expenditure the sum at present in hand would not last more than a year. It was decided, however, to prepare a brief statement setting out the position and activities of the Fund, so that, in making any further appeal that might be necessary, the evidence would be clear of the valuable nature of the Fund's activities.

The question of the possibility of assisting Russian medical men, prisoners of war, under whose care many English prisoners have derived benefit, was brought before the committee. While it was not thought that the Fund raised for Belgian doctors, pharmacists, and their dependants could possibly be administered for the good of anyone else, the idea of starting a small fund among English medical men on similar lines, and having the Russian doctors, prisoners of war, as its object, was discussed sympathetically.

Sir Rickman Godlee, chairman of the Committee, announced that he had received from Canada a case of instruments, which have been despatched straight to Belgium through the intervention of Mr. Hoover.

The address of the honorary treasurer of the Belgian Doctors' and Pharmacists' Relief Fund is Dr. H. A. Des Vœux, 14, Buckingham Gate, London, S.W., to whom

all subscriptions should be sent. The honorary secretaries are Dr. S. Squire Sprigge, THE LANCET Office, 423, Strand, London, W.C., and Mr. W. J. Uglow Woolcock, the Pharmaceutical Society, 17, Bloomsbury-square, London, W.C.

Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

M. O. Hunter to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Lieut.-Col. A. B. Soltau, C.M.G., R.A.M.C. (T.F.), to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. C. A. Peters, C.A.M.C., to be A.D.M.S.

Major J. Matthews to be temporary Lieutenant-Colonel.

C. H. Muller, South African M.C., to be temporary Lieutenant-Colonel.

J. Hunter, South African M.C., to be temporary Major.

Temp. Lieut. C. C. B. Thompson to be temporary Captain.

To be temporary Captains: R. P. McNeil, D. S. E. Macnab, W. McG. Montgomery, J. Tremble, T. J. W. A. Johnston, R. I. Wolfe, K. A. Gilchrist, J. B. K. Tough, J. C. Venniker, T. A. Fuller, W. H. Watson, and P. E. Millard (all South African M.C.).

J. D. Milne to be temporary Honorary Lieutenant whilst employed with the Welsh Hospital, Netley.

The following relinquish their commissions: Temp. Capts. H. H. C. Fuller, F. W. Twort, H. Croly (on account of ill-health), and Temp. Lieut. T. Ewing.

Major (temp. Lieut.-Col.) J. Williamson relinquishes his temporary rank on re-posting.

SPECIAL RESERVE OF OFFICERS.

To be Lieutenants: G. S. Martin, from Aberdeen University Contingent, O.T.C., R. V. Clarke, and M. A. White, from Edinburgh University Contingent, O.T.C.

TERRITORIAL FORCE.

Lieut.-Col. E. J. R. Evatt to be seconded whilst holding appointment of Assistant Director of Medical Services.

Majors J. McD. Nicoll and P. R. Ash to be temporary Lieutenant-Colonels whilst commanding a Field Ambulance.

Capts. (temp. Majors) N. C. Rutherford and T. A. Green to be temporary Lieutenant-Colonels whilst commanding a Field Ambulance.

Capt. G. K. Maurice to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance.

Lieutenants to be Captains: W. G. Cook, W. O'Brian, J. H. Paul, and R. S. Weir.

General Hospitals: Capt. A. E. Wilson resigns his commission.

Attached to Units other than Medical Units.—Lieut. J. Wilson, W. Cullen, and G. R. Rickett to be Captains. Lieut. R. E. Pitts to be Lieutenant. K. Atkin to be Lieutenant.

TERRITORIAL FORCE RESERVE.

Capt. P. T. Jones, from Home Counties Field Ambulance, to be Captain.

INDIAN MEDICAL SERVICE.

The King has approved the restoration of the undermentioned officer from the Temporary Half-pay List to the Active List:—Capt. G. L. C. Little.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 6882 births and 6725 deaths were registered during the week ended Saturday, Dec. 16th. The annual rate of mortality, which had increased from 13·0 to 17·8 per 1000 in the four preceding weeks, further rose in the week under notice to 20·3 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first eleven weeks of the current quarter the mean annual death-rate in these towns averaged 14·3, against 14·8 per 1000 in London. Among the several towns the death-rate during the week ranged from 9·5 in Hornsey, 9·7 in Rhondda, 10·7 in West Bromwich, 11·0 in Hastings, and 11·1 in Enfield, to 25·5 in York, 26·1 in Walsall, 26·7 in Bournemouth, 27·6 in Rotherham, and 29·5 in Brighton.

The 6725 deaths from all causes were 813 in excess of the number in the previous week, and included 230 which were referred to the principal epidemic diseases, against 228 and 226 in the two preceding weeks. Of these 230 deaths, 82 resulted from infantile diarrhœal diseases, 61 from diphtheria, 50 from measles, 18 from whooping-cough, 12 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0·7 per 1000, and coincided with that recorded in each of the two preceding weeks. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had declined from 477 to 83 in the 13 preceding weeks, numbered 82, and included 23 in London, 5 each in Sheffield and Liverpool, and 4 in Leeds. The deaths referred to diphtheria, which had been 45, 50, and 47 in the three preceding weeks, rose to 61, of which 15 occurred in London and 4 each in Birmingham, Liverpool, and St. Helens. The fatal cases of measles, which had been 29, 47, and 56 in the three preceding weeks, fell to 50, and included 17 in London, 9 in Liverpool, 4 in East Ham, and 3 each in Edmonton and Coventry. The deaths attributed to whooping-cough, which had increased from 12 to 23 in the four preceding weeks, fell to 18, of which 5 were registered in London and 1 in Stoke-on-Trent. The deaths referred to scarlet fever, which had been 6, 7, and 8 in the three preceding weeks, further rose to 12, and included 3 in Liverpool and 2 in Leicester. The fatal cases of enteric fever, which had been 11, 4, and 9 in the three preceding weeks, fell to 7, and included 2 in Huddersfield.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 1171 to 1047 in the five preceding weeks, further fell to 1012 on Saturday last; 100 new cases were admitted during the week, against 120, 120, and 103 in the three preceding weeks. The cases of diphtheria numbered 1473, against 1584, 1550, and 1513 at the end of the three preceding weeks; 158 new cases were admitted, against 195, 171, and 169 in the three preceding weeks. The 1810 deaths from all causes in London were 127 above the number in the previous week, and corresponded to an annual rate of 21·9. The deaths referred to diseases of the respiratory system, which had steadily increased from 132 to 400 in the eight preceding weeks, further rose to 524 in the week under notice. The deaths from influenza numbered 81, against 41 and 55 in the two preceding weeks.

Of the 6725 deaths from all causes in the 96 towns, 219 resulted from violence, 484 were the subject of coroners' inquests, and 1857 occurred in public institutions. The causes of 75, or 1·1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Bristol, West Ham, Bradford, Nottingham, and in 62 other smaller towns. Of the 75 uncertified causes, 17 were registered in Birmingham, 15 in Liverpool, 4 each in London and Gateshead, and 3 each in Dudley and Newcastle-on-Tyne.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 176 births and 191 deaths were registered during the week ended Saturday, Dec. 16th. The annual rate of mortality, which had been 20·1, 17·7, and 20·5 per 1000 in the three preceding weeks, rose to 25·1 in the week under notice, against corresponding rates of 21·9 and 18·4 per 1000 in London and Glasgow respectively.

The 191 deaths at all ages included 29 of infants under 1 year and 65 of persons aged 65 years and upwards. Four deaths were referred to infantile diarrhœal diseases, 3 to scarlet fever, 2 to enteric fever, and 1 to diphtheria. The causes of 10 deaths were uncertified, and those of 5 others were the subject of coroners' inquests, while 62, or 32 per cent., of the total deaths occurred in public institutions.

During the same period 125 births and 142 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 19·0, or 4·0 per 1000 above that recorded in the previous week, and included 14 of infants under 1 year and 44 of persons aged 65 years and upwards. Seven deaths were referred to infantile diarrhœal diseases, 2 to measles, and 1 each to enteric fever, scarlet fever, whooping-cough, and diphtheria. The causes of 5 deaths were the subject of coroners' inquests, and those of 4 others were uncertified, while 44 of the total deaths occurred in public institutions.

MEDICAL ENTOMOLOGY OF SALONIKA.—Mr Malcolm E. MacGregor, of the Wellcome Bureau of Scientific Research, will exhibit to medical officers and others interested in the pamphlet issued from the bureau on the "Medical Entomology of Salonika," by Temporary Lieutenant-Colonel Andrew Balfour, C.M.G., R.A.M.C., actual specimens of the insects described in the pamphlet, and will further outline their life-history and the methods of destroying them. Between the hours of 10 A.M. and 4 P.M. on the week days, excepting Saturdays, the Museum of the Bureau, 10, Henrietta-street, Cavendish-square, will be available for this purpose.

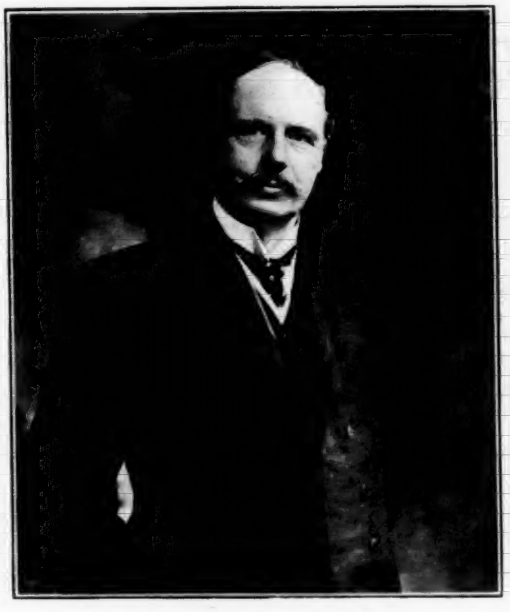
Obituary.

SIR FREDERIC S. EVE, F.R.C.S. ENG.,

TEMPORARY LIEUTENANT-COLONEL, R.A.M.C.; CONSULTING SURGEON, EASTERN COMMAND, AND TO THE LONDON HOSPITAL AND PRINCESS HENRY OF BATTENBERG'S HOSPITAL.

THE death of Sir Frederic Eve, which occurred on Dec. 15th, came with tragic suddenness, as he was seized with pneumonia only three or four days before the fatal issue. On the outbreak of the war Sir Frederic Eve, with other members of the London Hospital staff, took up work at the military hospital in Chelsea. After serving there for some time and being promoted in rank, he left it to become consultant to the military hospitals in the Eastern Counties. His new duties entailed frequent and long journeys, and it is probable that during one of these he contracted his fatal illness.

Born in 1853, son of the late William Eve, of North Ockenden, Essex, Frederic Samuel Eve entered St. Bartholomew's Hospital as a student about the time (1871) when Sir James Paget retired from active duty, and he followed the same course of pathological work with ardour and success. As curator of the museum at St. Bartholomew's he brought out in 1882 the catalogue of that fine collection. The year before this he became pathological curator in the Royal College of Surgeons of England, being the first to hold this appointment, and he continued to work in the Museum at Lincoln's Inn Fields until 1890. To the College of Surgeons it was important to have as curator a surgeon engaged in active hospital work, one who knew the problems which were specially engaging the surgical world and who would help to supply the Museum with specimens directly relating to them. On the other hand, the unique facilities for observing and working out rare and interesting cases provided by these two pathological appointments were of the utmost value to Frederic Eve. Like Sir James Paget, his early friend and teacher, he was especially attracted to the investigation of tumours, though his best work was by no means confined to this branch of pathology. On the subject of surgical tuberculosis, diseases of bones and joints, certain fractures and dislocations, and the abdominal viscera, he published original papers which advanced knowledge and will for long be consulted. As Erasmus Wilson lecturer during several years (1882-83-84), he brought forward his work on tumours, especially those of the jaws, in which he established the malignant nature of a form of cystic tumour involving these bones. But his first important paper, read before the Royal Medical and Chirurgical Society in 1880, dealt with the subject of direct dorsal dislocation of the hip. This early paper was typical of all Frederic Eve's work, for it gave in clear, concise language views resulting from his own research; where they differed from those advanced by others the contrast was strongly asserted. The paper was not only well written, but well illustrated; further, the foundation of the paper was pathological, and this is true of nearly all his very numerous publications up to his recent Bradshaw Lecture[1] on Hæmorrhagic and Chronic Pancreatitis. In 1883 a surgical registrar was required at the London Hospital, and Frederic Eve took the decisive step of severing his connexion with St. Bartholomew's and was elected without opposition. After he had served in his new post for only a year an opening occurred on the staff. After a strenuous and very close contest he was elected assistant surgeon, and he remained associated with the London Hospital until his resignation from the staff in December, 1914.



SIR FREDERIC S. EVE, F.R.C.S. ENG.

Mr. Jonathan Hutchinson, who writes this obituary notice as Sir Frederic Eve's colleague and friend for nearly 30 years, says: I know that he was a bold and brilliant operator and a most successful teacher in the wards. With the exception of the lectureship on surgical pathology for a few years, he held none of the special teaching posts at the London Hospital, but was for a time ophthalmic surgeon until the inevitable separation between ophthalmic and general surgical work came to him as to others. He performed his full share of work on the Medical Council of the hospital and on the College Board during the arduous years when both medical college and hospital were steadily developing against grave financial and other obstacles to their present high position. His powers of clinical investigation and teaching were of the utmost service to the students of the hospital. But above all his great success in these directions, as well as in private practice, it is as a surgeon-pathologist that Sir Frederic Eve won renown, and by his work in surgical pathology, as indeed he himself would have desired, his memory will be preserved in our profession.

Eve's contributions to surgical literature are numerous. In the Transactions of the Pathological Society will be found no less than 60 papers by him, and it is difficult to select out of so large a number the most valuable ones. Several related to diseases of animals, others to rare forms of tumours, such as those of the great omentum, renal growths containing combined muscle and sarcoma tissue, endotheliomata of the brain, cystic tumours of the testis, congenital hypertrophy (giant growth) of the extremities, sarcoma of the tongue. One paper of particular interest illustrated that very rare disease, psorospermial cysts of the ureteric lining membrane. Another proved that a form of chronic enlargement of lymphatic glands without any caseation was really of tuberculous nature—a valuable and original observation. Besides this mass of pathological work Eve contributed no fewer than 15 papers to the Clinical Society's Transactions, and six to those of the Medical Society and the Royal Society of Medicine. Especial attention may be drawn to those describing enormous cystic dilatation of the common bile-duct (Clin. Soc., 1906), traumatic myositis ossificans (ibid., 1899), arthrectomy of the knee for tubercle with almost perfect recovery of movements in the joint (ibid., 1901), two cases of mesenteric cyst in children with dissection and illustrations (Med. Chir. Trans., 1898), and angioma of muscles and synovial membrane. Of late years Eve was especially interested in abdominal surgery, and of his papers on this subject we may select one on resection of the large intestine, as it included a review of tuberculous disease of the cæcum simulating appendicitis, a condition which has led most surgeons at one time or other into serious errors of diagnosis and treatment. It is doubtful whether his advocacy of gastro-plication or of operations for fixing up the prolapsed stomach will receive much support, but every paper from Eve's pen bears evidence of his industry, scientific acumen, and wide pathological knowledge. In all the facts and deductions are admirably arranged and advanced, all are worthy of the author.

Some allusion must here be made, however briefly and imperfectly, to Sir Frederic Eve's official work for the Royal

[1] THE LANCET, 1915, i., 1.

College of Surgeons of England. Apart from his long tenure of the Curatorship in the Museum and his Erasmus Wilson and Bradshaw lectures, he served for nine years on the Examining Board (1902 to 1911). Eve was an ideal surgical examiner, always considerate to the candidates and scrupulously fair. In 1904 he was elected on to the Council, and at the time of his death was one of the Vice-Presidents. Few persons realise the very great amount of time and labour required from the holders of these posts, and Eve left nothing undone during the term of his office. In all, his work at the College covered the long period of 24 years, and he was justly proud of his high position on its Council, which no one could have better earned. By his colleagues there and at the London Hospital, as well as by many other friends in the profession, his loss will be deplored and his memory will be honoured, and the deepest sympathy is felt for Lady Eve in her bereavement.

Frederic Eve was knighted in 1911. He leaves one son, now serving in France, and one daughter.

A memorial service was held on Wednesday last at All Saints', Margaret-street, which was attended by a large number of medical and official colleagues and friends, including Sir W. Watson Cheyne, President of the Royal College of Surgeons of England, Lieut.-Colonel Yolland, of the Eastern Command, Professor W. Wright, of the London Hospital, and Dr. A. J. Rice-Oxley, representing H.R.H. Princess Henry of Battenberg.

Correspondence.

"Audi alteram partem."

THE PROHIBITION OF ALCOHOLIC BEVERAGES.

To the Editor of THE LANCET.

SIR,—You recently considered the memorial to the Government signed by a thousand thoughtful officers, and business and professional men, asking the Government to suspend all drink licences for the period of the war. That request is so important, I beg you will let me draw attention to it again. The memorial states that, even where it does not cause drunkenness, alcohol by "the constant sapping of man's energies" endangers the supply of munitions. Anyone might be excused for thinking that such a pronouncement from so wise a body of men would cause the munition workers as a body to drop all drinking. But we in the medical profession will be less sanguine, for we know that we have been telling people for years that those who drink live fewer years than do teetotallers, yet that people continue to drink. They prefer a more cheerful life and shoot Niagara with eyes wilfully closed. They will not take scientific precautions for themselves; are they likely to take them for the country? Drink makes them more sociable and their friends more interesting, but they feel, unconsciously perhaps, that it makes them less able to take care of themselves, and that they should only drink with their friends, not with strangers, and still less with enemies about. (Does not that apply to the nation now?)

Drink is an anæsthetic which relieves the pain of disappointed love, of poverty, of indigestion, and, above all, it makes people feel comfortable and better pleased with themselves. Why—men ask—should we not drink? That wine is a mocker they do not frankly believe. It has before now lessened their self-control, blunted their perceptions, and impaired their judgment; it has made them less alert and less efficient at their work; all these things are proved by the chronograph, but of none of them will the obstinate and selfish moderate drinker be convinced. But we members of a scientific profession, we know they are all true. As men of the world, too, we know that nothing like the whole of the damage done by drink has been brought home to drinking. How few are the accidents unattended by a whisper about drink as the cause? How often, when some accident has happened, is the suggestion about its author heard in the mess—"He does himself pretty well"? And is it not just as frequently true that when a formal inquiry is being held most particular endeavour is made by everyone to keep any suggestion about alcohol from the official notice of the people who are inquiring.

Why is everyone so friendly to drinkers? I remember a very distinguished officer to whom I mentioned the death of A, a brother officer with whom we had both served at different times in the same ship. "He drank a bit," said I. "Yes," said the other, "but I could never catch him; everybody shielded him." And I recalled to myself an occasion when A was "under the influence," and some half-dozen officers stood round him to shield him from possible notice by his (and our) captain near by. Yet his failing might have drowned us any night.

Drink being known to be so frequent a cause of accidents and delay to work, and it having been stated by authority that we are fighting three enemies, Germany, Austria, and drink, of which the most deadly is drink, surely it is nothing but our British want of logic that keeps open the licensed houses which the memorialists desire closed throughout this war. Inadvisable in peace-time, indulgence in alcohol is suicide now. The moderate drinker may easily pass over his limit by a chance any day. And think of the responsibilities to-day, especially those of public servants, a captain in the trenches, the commander of a destroyer, a Cabinet Minister. Why should they drink? To compensate them for the strain of their anxieties? It is pleasant; it is an anæsthetic. Will the enjoyment of that small sensuous pleasure make up to them or will it compensate us, their employers or their beneficiaries, for perceptions delayed, decisions slowed, one gunfire wasted, a ship lost, an opportunity unseized? But of course it would be most unfair to stop naval officers' grog while we went on drinking grog ourselves, or to keep it from the soldiers while allowing it to the Cabinet. Wherefore, I submit it is most important that the Government, determined to spare no effort to win the war, should accede to the prayer of the memorial and close all licensed houses till the war ends. Such is undoubtedly the teaching of science.

I am, Sir, yours faithfully,

W. E. HOME,
Fleet Surgeon, R.N.

Naval and Military Club, Dec. 5th, 1916.

THE USE OF X RAYS DURING OPERATION FOR FOREIGN BODIES.

To the Editor of THE LANCET.

SIR,—I have found the following technique invariably successful in cases of removal of metallic foreign bodies, and I adopt this procedure in all cases, however simple. The X ray room is turned into a temporary operating theatre. The patient prepared for operation is placed on the X ray table with the tube underneath. The tube is then centralised under the part to be operated on. The room is then darkened and the foreign body is localised by the screen in the ordinary way in order to see where the incision should be made. Lights are then turned up. The surgeon washes up and prepares for operation while the patient is being anæsthetised. One nurse is told off to turn the light on and off. Another nurse takes charge of the screen, and another nurse or the X ray operator controls the switch-board for the X ray apparatus. The operation is now commenced. If the foreign body is not immediately found the operator has merely to ask for X rays. Without further instructions, each assistant does her allotted part and the operation proceeds in the dark with the shadow of the instruments and the foreign body getting closer together. This may only require a few seconds.

In a recent operation, where I was searching for a piece of shrapnel about as big as my little finger-nail (and as thin) in the buttock very near the great sciatic nerve and which was causing intense sciatica, I had to ask for the rays five or six times, and each time I had merely to say, "X rays, please," and "Lights, please," alternately, and I was able to get the piece out with very little damage to tissues. A month previously I had failed to find it in the operating theatre, though I had myself spent a long time in "marking" it down. I now adopt this method for all cases.

There are, of course, a few drawbacks to the method, the principal one being the want of space in many X ray rooms. So many hospitals when installing X rays have put their apparatus into such small rooms. This is not only greatly

against turning the X ray room into a temporary operating theatre, but it is a great source of inconvenience in ordinary X ray work. Other drawbacks, such as washing appliances and general disarrangement of the theatre appliances, can, of course, only be overcome by willing coöperation of the staff. The anæsthetist may grumble too, but the time he is left in the dark is very short and it is always up to him to call for lights at any moment if he wishes.

In conclusion, I must mention that in the V.A.D. Yacht Club Hospital our success has been due to the generosity of Mr. Leopold Cust and the British Red Cross Society, who have given and installed the X ray apparatus in quite a large room, and to the willing coöperation of the commandant and the staff.—I am, Sir, yours faithfully,

STEPHEN M. LAWRENCE, M.D., B.S. Lond.,
Surgeon to Gravesend V.A.D. Yacht Club Hospital and Assistant Surgeon and Radiographer to Gravesend General Hospital.

Dec. 16th, 1916.

THE MOBILISATION OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—May I be permitted to enter the most vigorous protest against the attitude suggested by Dr. Major Greenwood? It has been sufficiently obvious for some time that the medical profession is in an exceptional position among professions. In a word, more medical men are wanted for the Army. We have had every chance of coming forward voluntarily and the response has been splendid, but, still, the well-recognised economic considerations of medical practice hinder a response as full as is required. These considerations even hinder the Government from calling up doctors of military age until they have acquired authority to compensate resulting deficiencies in the areas from which these men are called. No other interpretation of the fact that these doctors are wanted and still not called up is possible.

If the voluntary effort is not enough, one naturally looks for, and expects, a compulsory levy. And against this Dr. Major Greenwood protests on the amazing grounds that it would be, he considers, contrary to the "dignity and honour" of the profession. Anything less honourable and less dignified than "the strongest opposition" to any step which a War Government may consider necessary can hardly be conceived. That our interests should be looked after as well as possible (they will need it) is agreed, but Dr. Greenwood will lead a crusade of one against the utmost demands genuinely required of the profession. Surely our present record of free work and sacrifice is eloquent of that, a record not approached by any other class. Incidentally, may I remark that I do think that the profession should long ago have thrashed out a plan for its mobilisation—individual members I know have such plans, but our leaders (?) are silent.—I am, Sir, yours faithfully,

Sevenoaks, Kent, Dec. 18th, 1916. GORDON WARD, M.D. Lond.

To the Editor of THE LANCET.

SIR,—I sincerely trust and believe that Dr. Major Greenwood mistakes and misrepresents the profession in his letter in your issue of Dec. 16th. The question is not whether we are doing or have done more than other people or more than our share, but whether we are doing our utmost. If, by mobilisation or rearrangement, we can do more or better work for the fighting men or the nation the sooner it comes the better. For individuals or classes to look round to see if they by chance are doing more than their share is, to my mind, the negation of patriotism. If equality of sacrifice is to be enforced, where is the firing line—in convalescent homes?

I am, Sir, yours faithfully,

Watford, Dec. 18th, 1916. J. C. BARKER.

TICKLING COUGH.

To the Editor of THE LANCET.

SIR,—Mr. T. Mark Hovell, in his remarks as President of the Laryngological Section of the Royal Society of Medicine, was most interesting anent his remedies for "tickling cough," and may I call attention to the efficiency of codeia in relieving this distressing complaint following on certain conditions of ill-health. Only a few of us have any knowledge of trichloracetic acid, but all of us have experience of codeia in various ways. For many years past I have been in the habit of prescribing codeia in cases of "tickling cough" following on influenza, tuberculous laryngitis, &c., and rarely does it fail. Mr. Hovell remarks that all diseases of the throat are not of local origin, and in this respect one has to remember the wide connexions of the vagus nerve and try to apply the appropriate treatment. In prescribing for "tickling cough," as following on or in association with influenza, &c., the formula I use is as follows:—

Codein.	gr. iss.
A. citric.	gr. v.
Syr. pruni virgin.	℥ iv.
Syr. tolu	℥ iv.
Aq.	℥ iv.

A teaspoonful to be sipped occasionally.

CASE 1.—A clerk in holy orders was ordered off to South Africa some 25 years ago by a London specialist as suffering from consumption. He arrived home in the course of two years, and resumed his work as a curate. Twenty years ago he came under my care supposed to be suffering from whooping-cough. The cough was tickling and in every way most distressing; it lacked the peculiar whoop, but in many other respects it was suggestive of whooping-cough. Auscultation of the chest and examination of the sputa suggested influenza. Codeine soon relieved the cough, and in a short while he became quite well. He is now (at 50) a hard-worked vicar, and has been such for the past 16 years or more. I may also mention that on marrying he was accepted as first class for life assurance.

CASE 2.—A married lady, aged 50, from Scotland, came under my care last winter supposed to be suffering from tubercular laryngitis. She was anæmic and had lost flesh; temperature 100° F.; T.B. absent; little or no expectoration. Auscultation revealed moist sounds generally; she had a tickling and most distressing cough, which was incessant in the recumbent position, each paroxysm being quickly followed by another and affording no relief, hence the night was almost sleepless. Codeine soon relieved the cough and in other respects she was not long in picking up and returned to her usual family avocations. Her condition was undoubtedly due to influenza.

I am, Sir, yours faithfully,

Bournemouth, Dec. 11th, 1916. A. KINSEY-MORGAN.

PATHOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—In your report of the papers by Professor S. G. Shattock and Mr. L. S. Dudgeon on the above subject before the Royal Society of Medicine last week no reference was made to the discussion. In the absence of the President of the Section of Pathology I occupied the chair at the meeting, and wish to correct the impression which the report may produce that their views passed without criticism from me. I pointed out that the mediastinal and pulmonary growths are conditions common in old mice and of doubtful malignancy. This leaves one undoubted malignant tumour out of four animals experimented upon. This is not an exceptional frequency in mice of two years of age or over. Hence, in my opinion, it is unnecessary to assume that feeding with transplanted tumours had anything to do with the result. I am, Sir, yours faithfully,

J. A. MURRAY.

Imperial Cancer Research Fund, Dec. 18th, 1916.

A SMALL outbreak of dysentery has occurred at Lethanhill, a mining village in the county of Ayr. Nine cases have been reported with three deaths. The county medical officer, Dr. C. R. Macdonald, attributes the outbreak to infection from a discharged soldier.

LITERARY INTELLIGENCE.—The new General Catalogue of the Oxford University Press (Humphrey Milford) is dated November, 1916, and is divided into a subject catalogue comprising 480 pages and a comprehensive alphabetical index of authors, editors, and titles. The subject-catalogue gives such bibliographical details as size, number of pages, date of publication, and in some cases a specimen illustration. Section V., which deals with natural science and medicine, covers 32 pages, and contains a complete list of the Oxford Medical Publications. It seems probable, a prefatory note states, that the present issue of the catalogue will be for some time current, but lists of books subsequently published will be gathered from time to time in a "cumulative" supplement.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Died of Wounds.

Capt. R. F. Hughes, Australian Army Medical Corps.

Wounded.

Capt. H. R. Smith, R.A.M.C., attached Royal Lancaster Regiment.
Capt. J. D. MacCormack, M.C., R.A.M.C.

THE CENTRAL MEDICAL WAR COMMITTEE.

A meeting of the Central Medical War Committee was held at the offices of the British Medical Association on Wednesday, Dec. 20th, when a report made by the Executive Subcommittee was adopted dealing with the calls for medical officers that have been made on different areas. The document also considered the method in which further calls will be made. The report was accompanied by an elaborate analysis of the conditions in each particular area, showing its population by the 1911 Census, the total number of general practitioners, consultants, and whole-time medical officers therein, the number of practitioners under 41 years of age, the number between the ages of 41 and 45, the resulting number of men who might be available for service in each district, and the number of calls to be made. An interesting debate ensued, in which the report was adopted by the Committee unanimously, as being the way in which, on general grounds, a fair assessment could be made. The figures presented fallacies on the surface which proved, in the main, capable of complete explanation. Sometimes, for example, fewer calls appeared to be made from larger populations, but on examination it could be shown that one city contained many *à la suite* officers, another was the small urban centre of a large rural district, and in another all the men remaining were over age. The report recommended that calls should be made on the various areas in accordance with the information.

A debate followed upon the question of the mobilisation of the medical profession, with the result that it was decided to send a deputation to make representations to the proper Government department.

THE CANADIAN ARMY MEDICAL SERVICE.

Our Canadian correspondent writes: During the past few weeks we have little but talk about our Army medical services, and in particular about the surgical and hospital part of the services abroad, and this not only among medical men, in the medical press and at medical gatherings, but very widely in the public press also. Extracts and abstracts have been published of a special investigation by Colonel Herbert A. Bruce, of Toronto, who was deputed by Sir Sam Hughes, recently-resigned Minister of Militia for Canada, to make a report. The announcement that Surgeon-General Guy Carleton Jones, Director-General, was returning to Canada; that Colonel Bruce was temporarily acting in that capacity; that Sir William Osler and others had resigned in sympathy with General Jones; and the subsequent statement that General Jones was reinstated by the Premier, Sir Robert Borden—these and other items of news came hard on each other's heels, and kept medical men in suspense as to what was coming next. It was well known in Canada that General Jones was an expert in army medical work, and that Colonel Bruce was equally expert in surgery and hospital work; and surprise was felt that two such eminent men in the Canadian medical profession could not both be used for the best good of the Canadian soldier, or of the British soldier, wherever he was to be found. That appears to be the outstanding feeling of the medical profession in Canada, which has to form judgments far away from the scene of action, and with only a limited second-hand knowledge to base them upon. But quite apart from personal bias, the medical profession in Canada, and the public generally, will do well to look the facts squarely in the face; and these cold facts are furnished in the recent casualty lists from Ottawa, dated Nov. 13th, 1916. The total casualties now number over 60,000, classified as follows: Killed in action, 9457; died of wounds, 3477; died of sickness, 490; presumed dead, 1027; wounded, 43,245; missing, 2245. This list does not include prisoners, the omission of whom is immaterial, as they do not concern the work of Canadian hospitals and surgeons abroad. The most striking feature of this report, and one which readily appeals to the lay mind, is the very small number of deaths from sickness—490, out of a total of 60,000 casualties, or less than 1 per cent. Surely this points to clever scientific work on the part both of sanitary and medical staff. It has been stated on responsible authority that only one Canadian soldier has died from typhoid fever, and that he had absolutely refused inoculation, although inoculation is compulsory in the Canadian overseas forces. Canada has already raised an army of 370,000 for overseas service, and if it is fair to assume that 200,000 or 250,000 have been on the Western battle front, an army equal to the whole British Expeditionary Force in the South African War, then there is good reason for congratulation at the work of the medical services; for typhoid fever, we know, claimed 8022 lives in that campaign, to say nothing of the 19,000 men who were invalided home and the other casualties from dysentery and pneumonia. The question which necessarily occurs to Canadian medical men at home is, Have our Canadian surgeons been securing the best results in returning wounded soldiers to the trenches? Without first-hand knowledge this cannot be answered. But that is the question which the authorities should keep steadily in mind, for if our best surgeons volunteer for service their services will surely be gladly accepted. The general feeling in Canada, as in all other parts of the British Empire, is that our soldiers must receive the best skill and experience which Canada has to offer. They must be well taken care of, not only in the hospitals abroad, but after they return to Canada as well. Nothing else will satisfy the profession of Canada or the public of the Dominion at large. In union there is strength; and this motto applies to the medical services as to all other branches. Our authorities should diligently examine and determine—the higher up the more pertinent—whether the very best medical men are in command, not only in Canadian headquarters in England, but in Ottawa as well.

PHYSICAL TREATMENT FOR DISABLED SOLDIERS.

We have received an interesting report from the War Service Committee of the Section of Balneology and Climatology of the Royal Society of Medicine, of which Dr. Septimus Sunderland is chairman and Dr. J. Campbell McClure and Dr. R. Fortescue Fox honorary secretaries. The report is a continuation of that published in THE LANCET of Feb. 5th, p. 311, and states that the Section of Balneology has consistently pressed for the utilisation, not only of hydrological treatment, but of all associated physical methods—electrical, mechanical, and otherwise. In the committee's opinion, an adequate installation of remedial baths must include (1) sedative treatment as in the pool bath; (2) tonic treatment as in the douche and effervescent bath; (3) local treatment for disabled limbs as in the whirlpool bath. If the best results are to be obtained they believe it is necessary to use all three classes of treatment, and they have pressed this conclusion upon the Army medical authorities. They also regard an adequate training in the science and practice of hydrology as indispensable to those who are to conduct this remedial treatment. The following points have emerged in the course of recent work: (1) Experience has shown that hydrological remedies have both physical and psychical effect; (2) the association of treatment and training is essential in the later stages of convalescence; (3) mechanical treatment has real value as a stepping-stone to occupational re-education; (4) accurate periodic measurement of muscular defect is essential as a guide to physical treatment; (5) the value has been proved of the sedative pool bath in cases of recent shell shock, insomnia, and disordered heart action; (6) rapid relief of disablement follows the use of the whirlpool bath in cases where other methods have failed. The committee express their conviction that the disability, both surgical and medical, of large numbers of soldiers is definitely amenable to physical remedies, and they plead for an adequate and continuous physical treatment of such cases.

OBITUARY OF THE WAR.

IAN ALEXANDER MURRAY CLARKE, M.B., CH.B. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain I. A. M. Clarke, who was killed in action on Nov. 16th, was the elder son of the Rev. Dr. Clarke, of Mossgreen, Crossgates, Fife. Educated at Dunfermline High School and Edinburgh University, he was a fifth-year medical student when war broke out and joined the Red Cross in September, 1914, spending six months at Rouen. He then returned to take his qualifying examination in July, 1915, receiving a commission in the R.A.M.C. and becoming attached first to a field ambulance and then as medical officer to the Dorsetshire Regiment. He was invalided home for trench fever, returned to the front, and was killed by a shell. Letters from his commanding officer and others speak of Captain Clarke's untiring energy and cheerful disposition, which made him a popular and efficient medical officer. In his own last letter he anticipated being killed in action and spoke of it without personal regret.

NEIL MURPHY GAVIN, F.R.C.S. EDIN.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant N. M. Gavin, who was accidentally killed on active service on March 12th, at the age of 42, was educated at Stirling High School, leaving when only 14 to enter business. Apprenticed at 16 in Glasgow, he tried to live on his meagre salary, and then conceived the intention of becoming a medical missionary. The opportunity, however, did not come until six years later, when he joined the Edinburgh Medical Missionary Society and started on his medical course in Edinburgh. Qualifying in 1901, he spent some months as assistant in a country practice, and in the following year became F.R.C.S. Edin. In the autumn of 1902 he sailed for India, having been appointed to a station at Anand, in the northern part of the Bombay Presidency, under the Irish Presbyterian Church. He married in the following year Muriel Stevenson, M.B., Ch.B. Edin., daughter of the missionary, Dr. Fleming Stevenson, and in their hands the medical work of the mission steadily grew during a period of 13 years. Mr. Neil Gavin then volunteered for service with the R.A.M.C., received his commission, and after some work at a German Prisoners' Camp, became medical officer to a field ambulance in France. In the course of his duties he was thrown by a bolting horse, sustaining a compound fracture of the base of the skull, and died without regaining consciousness.

The story of Mr. Gavin's work in India is told in a little booklet written by his wife, entitled "The Doctor Sahib," published by the Sabbath School Society for Ireland (Belfast). The success of the medical work at Anand was such that instead of the small dispensary for women and children which he founded on arriving, "when he left, after 13 years, he left behind him a fully equipped and up-to-date hospital, with 70 beds, a staff of trained native Christian assistants, an out-patient attendance of close on 30,000, and an annual operation list of 1000." At the same time the caste difficulty was gradually solved, and the hospital sometimes contained all castes lying side by side in the same ward. The personal qualities which contributed to this result must have been telling ones, and are stated thus in the booklet: "His greatest power lay in his gentleness and his sympathy. He was always helping somebody, though he thought so little of himself; for behind the tender chivalry and merry banter there was a depth and strength of character, and no one turned to him in vain."

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieut. C. B. Major, East Yorkshire Regiment, second son of Capt. A. C. Major, R.A.M.C.

Lieut. P. Haslock, R.N., second son of the late Dr. H. Haslock, of Summersdale, Chichester.

MALARIA AND ITS TREATMENT: EXPERIENCE OF AN AUSTRALIAN EXPEDITION.

In August, 1914, after war had been declared, a military expedition left Australia for New Guinea and other German possessions in the East Indian Archipelago. During the operations a number of the troops contracted malaria, for which they were treated on the spot by quinine; but in many of them the malady recurred on their return to Australia, and for this they were admitted to various local hospitals. Some 30 of these cases which had been treated in these institutions with comparatively large doses of quinine nevertheless continued to have recurrences of the disease, and for this they were sent to be specially treated in the tropical ward of the Townsville Hospital, where they came under the observation of Dr. A. Breinl and Dr. H. Priestly, of the Australian Institute of Tropical Medicine. These authorities have now published a note on the subject in the *Medical Journal of Australia*, giving some details of the treatment employed. This, it appears, consisted in the administration of 30 grains of quinine hydrochloride, or bisulphate, of quinine daily in three doses for three to four weeks, followed up by 30 grains every other day for a further period of two weeks and 20 grains every other day for two more weeks, and then 20 grains weekly for at least another two months. This treatment may seem at first rather severe and prolonged, but it is contended that malaria, like other protozoal diseases—e.g., syphilis and sleeping sickness—is an exceedingly chronic affection requiring protracted treatment. Moreover, it was found that the malarial parasites from New Guinea displayed unusual resistance to the action of quinine. In this connexion Dr. Breinl and Dr. Priestly took into consideration the fact that a combined treatment by means of two different drugs, each of which acts as a parasiticide, had been found of service in syphilis, where arsenic and mercury, and in sleeping sickness, where arsenic and antimony had proved of great value. They therefore tried a compound of organic arsenic in the refractory cases, injecting 3 grains of soamin under the skin on four successive days and repeating the course three times at weekly intervals with satisfactory results. It is well known that trypanosomes may become resistant to arsenic in certain forms, especially if, in mild infections, treatment with insufficient doses has been continued for long periods. In these rare instances a dose of an arsenical compound toxic to the animal does not destroy the parasites in the peripheral circulation, but antimony salts in these cases show the full therapeutic effect upon the trypanosomes. Whatever the explanation may be, it is an undoubted fact that sometimes malarial parasites exhibit a similar behaviour in respect of quinine; it has been proved that in certain cases, after prolonged but insufficient treatment, even large doses of quinine do not destroy the malarial parasites in the peripheral circulation. The complicated life-history of the parasite, its adaptability to the changed conditions brought about by the reaction of the host against the parasitic invasion on the one hand, and insufficient quinine administration on the other, make it clear, in the opinion of Dr. Breinl and Dr. Priestly, that the treatment of malaria must be adapted to the individual, to the type of his infection, its

severity, and his susceptibility to quinine. They conclude that a cure can only be obtained by the discreet administration of large doses of quinine over a prolonged period, and may be facilitated by the use of organic arsenical preparations.

GIFTS TO THE RED CROSS SOCIETY.—The Red Cross Gift House, Pall Mall, which temporarily closed its doors on Dec. 16th, has raised during the past eight months £16,000 for the Red Cross Society and Order of St. John.—Sir Ernest Cassel has sent to the chairman of the Joint Committee of the Red Cross Society and the Order of St. John his fourth gift of £25,000 for the sick and wounded.—On condition that nine women will each give £1000 to the funds of the British Red Cross Society and the Order of St. John, Mrs. Frank H. Holder, of Queen Anne's Mansions, has offered to add another £1000 in order to make up a women's gift of £10,000. A similar conditional but anonymous offer awaits nine donors of £1000 each for its fulfilment.—The members of the Union of London Cab, Omnibus, and Tramway Car Workers have presented the Red Cross Society and Order of St. John with an ambulance car which is intended for London war work. It was stated at the presentation that out of over 33,000 members of the union more than a third were serving with the forces, and that every week there were from 150 to 200 drivers occupied in giving free conveyance to wounded men.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL AND THE WAR.—The demands on the assistance of Queen Charlotte's Lying-in Hospital, Marylebone, during the present year have been greater than ever before, owing to the fact that the hospital is admitting a great number of the wives of our sailors and soldiers, as well as Belgian and other refugees. Since the outbreak of war over 3000 wives of our sailors and soldiers have either been received into the hospital or attended in their own homes. A new (temporary) building adjoining the hospital has been opened for an ante-natal department, and an infant consultation centre is also being established. When so many lives are being laid down in the service of the country it is more than ever necessary to save the children, and Queen Charlotte's Hospital deserves the liberal support of the public to enable it to carry on its increasing and valuable work satisfactorily.

CONVALESCENT HOME FOR WOUNDED OFFICERS IN SIMLA.—The Lady Chelmsford Convalescent Home for 50 sick and wounded officers invalided from Mesopotamia was recently opened in Simla in a house placed by the Nawab of Maler Kotla at the disposal of the Commander-in-Chief in India. Lady Chelmsford, assisted by a committee of ladies, made herself responsible for the internal arrangements. The catering is in the hands of a hotel proprietor, officers being charged at the rate of Rs.2 per diem. Sixty-four officers have already passed through the home.

WAR HOSPITALS.—Mr. and Mrs. Barrow Cadbury have offered Uffculme, Moor Green, Birmingham, to the Society of Friends' Ambulance Unit as a hospital for the accommodation of 100 men.

BATHS FOR SOLDIERS.—Under the descriptive heading "Tubs for Tommies" the Emergency Voluntary Aid Committee of the Empress Club are appealing for funds to supply hot baths for soldiers at the front. The committee have been officially asked to supply 1000 units of baths. Subscriptions may be sent to "Tubs for Tommies Fund," 48, Old Bond-street, London, W.

THE King and Queen visited last week the Freemasons' War Hospital and Masonic Nursing Home, Fulham-road, S.W., and were received by Mr. George F. Marshall (chairman of the Board of Management), Mr. George Cowell, F.R.C.S. (chairman of the Medical Advisory Committee); and Sir Horace Marshall (honorary treasurer).

WAR HOSPITAL MAGAZINES.—The December issue (Christmas and New Year number) of the *Craigleith Hospital Chronicle* is an excellent production which will appeal to all classes. While affording a cheerful hour or so to its readers, it benefits the patients of the hospital in whose interests it is published, as all profits are devoted to extra comforts for the sick and wounded at the 2nd Scottish General Hospital. The address of the magazine is Craigleith, Edinburgh, and the price is 6*d*.—No. 12 of *Ration*, the Christmas number of the magazine of the Reading War Hospital, is another publication which should have a wide circulation. It is full of good fun both in picture and print and there are reproductions of the portraits of the retiring commanding officer, Lieut.-Colonel E. A. Hanley, and of his newly appointed successor, Lieut.-Colonel W. J. Maurice. *Ration* can be obtained at the Reading War Hospital, price 2*d*.

THE Duke of Westminster has given Eaton Hall to the nation as a military hospital for officers for the duration of the war. Provision will be made for 250 beds. Grosvenor House, London, will also become a military hospital.

Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were successful:—

FIRST B.M. EXAMINATION.

Organic Chemistry.—D. B. Pauw, Trinity.

Human Anatomy and Human Physiology.—T. A. Brown, B.A., Exeter; H. H. Cluver, B.A., Hertford; E. G. T. Liddell, Trinity; and J. E. B. Mortom, Queen's.

SECOND B.M. EXAMINATION.

Materia Medica and Pharmacology.—H. Burford, B.A., Christ Church; G. Cowie, B.A., University; P. B. Dutton, M.A., Magdalen; R. B. Hervey-Wyatt, B.A., and R. W. Lush, Christ Church; K. A. I. Mackenzie, B.A., Trinity; T. Patterson, B.A., non-collegiate; G. H. Rossdale, B.A., Merton; H. W. Toms, B.A., Jesus; and E. A. Woods, B.A., New College.

Pathology.—E. A. Crook, New College; T. Patterson non-collegiate; J. J. Savage, B.A., Brasenose; G. K. Stone, Trinity; and J. P. S. Walker, B.A., Oriel.

Forensic Medicine and Public Health.—H. E. Bamber, M.A., Worcester; E. F. Creed, B.A., and R. B. Hervey-Wyatt, B.A., Trinity; K. A. I. Mackenzie, B.A., Christ Church; S. W. F. Underhill, B.A., Brasenose; H. St. H. Vertue, B.A., University; and C. D. Wood B.A., Queen's.

Medicine, Surgery, and Midwifery.—H. E. Bamber, M.A., Worcester; W. Burridge, M.A., Christ Church; E. F. Creed, B.A., and G. I. Evans, B.A., Trinity; K. A. I. Mackenzie, B.A., Magdalen; G. H. Rossdale, B.A., Merton; S. W. F. Underhill, B.A., Brasenose; S. C. Varley, B.A., St. John's; H. St. H. Vertue, B.A., University; A. L. Watts, B.A., non-collegiate; and C. D. Wood, B.A., Queen's.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR MEDICAL DEGREES, PART II.

Enid Margaret Mary Bevan, London (Royal Free Hospital) School of Medicine for Women; Idris Davies, University College, Cardiff; Beryl Dyer, London (Royal Free Hospital) School of Medicine for Women; David Washington Evans, University of Bristol and London Hospital; Dorothy Winifred Gowers and Margaret Hammond, M.A., London (Royal Free Hospital) School of Medicine for Women; Robert David Jones, University of Liverpool and University College; Noel Edward Farnwell Kemm, University of Bristol; Muriel Mercer Kenworthy, London (Royal Free Hospital) School of Medicine for Women; Eugène Henri Léon Leclézio, Guy's Hospital; Baroness Teresa Jadwiga Lesser, London (Royal Free Hospital) School of Medicine for Women; Gerald Esmond MacAlevey, St. Mary's Hospital; Maurice Marcus, London Hospital; Robert Hughes Parry, Middlesex Hospital; Arthur Hywel Richards, St. Mary's Hospital; Joan Margaret Ross, Norah Edith Trouton, and Josephine Leigh Hunt Wallace, London (Royal Free Hospital) School of Medicine for Women; and Reginald Frank White, University of Bristol.

HONORARY (WAR) B.SC.

Lieut. Arthur Frederick Collins, Birkbeck College; Arthur Howard Jay, King's College; 2nd Lieut Colin McCabe, University College; Stanley Arthur Nickelson and Corporal Thomas Gregory Stamp, East London College; Corporal James Thomas Terrell, Imperial College—Royal College of Science; and Frederick Thomas Walker, Battersea Polytechnic.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful:—

M.B. AND CH.B., SECOND EXAMINATION.

Part A.—Evelyn D. Brown, W. T. Davies, Dorothy W. Hall, Dorothea E. Hewitt, E. S. Longton, S. D. McAusland, A. Marsh, R. R. B. Roberts, and W. R. Williams.

Part B.—P. E. Gorst (Distinction in Materia Medica and Pharmacology), F. G. Latham, E. T. Martin, D. R. Owen, and Frances Weightman.

M.B. AND CH.B., FINAL EXAMINATION.

Part I.—R. A. Cooke, S. G. Evans, Phœbe A. Ince, W. A. Jackson, W. M. Jones, V. Levy, G. A. Mitchell, S. G. Mohomed, F. A. Prosser, W. L. de Silva, G. S. Swan, and H. G. Young.

Part II.—E. H. T. Cummings, A. L. Davies, R. I. Duggle, R. R. Evans, and H. P. Williams.

DIPLOMA IN TROPICAL MEDICINE.

M. Barseghian, H. L. H. Lim, A. L. J. Lim, G. N. Metzger, E. D. Söderström, and — Wheeler.

L.D.S., THIRD EXAMINATION.

Part I.—J. A. Baldwin, F. P. Brown, F. Lockwood, and B. W. R. MacNabb.
Part II.—H. V. Fisher and B. W. R. MacNabb.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

FINAL M.B. AND CH.B.

*G. E. Archer, E. R. Gilmore, J. B. Leigh, B. L. Lloyd, *J. A. Panton, and C. R. Sandiford.
* Distinction in Obstetrics and Diseases of Women.

THIRD M.B. AND CH.B. EXAMINATION.

General Pathology and Morbid Anatomy.—T. H. Almond, Sybil Bailey, James Charnley, Thomas Colley, S. E. Critchley, J. C. T. Fiddes, F. L. Heap, John Mills, Kathleen O'Donnell, M. C. Paterson, Norah H. Schuster, L. J. Schwartz, V. T. Smith, Marie Wardman, and F. L. Whincup.
Pharmacology and Therapeutics.—Mary G. Cardwell, H. T. Savage, V. T Smith, and G. R. Wadsworth.

SECOND M.B. EXAMINATION.

Kathleen Doyle, Georgiana Duthie, Percival Fildes, F. G. Hamnett, *Simon Kelly, J. N. Laing, *†W. E. Mason, J. G. Nolan, E. R. Ormerod, Olga G. M. Payne, F. L. Pickett, Effie Ratner, William Reikan, A. E. H. Sadek, Doris M. R. Tompkin, Ethel D. Willis, Ruth A. Wilson, and James Yates.
* Distinction in Physiology.
† Distinction in Physiology and Anatomy.

Physiology.—R. J. Allison.

FIRST M.B. EXAMINATION.

Part III. (Organic and Bio-Chemistry).—J. B. Fulton, W. E. Mitchell, E. L. Morgan, Annie Rothwell, and El. S. El. G. Sheir.

DIPLOMA IN DENTISTRY (THIRD EXAMINATION).

C. H. Travis.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Dec. 14th, Sir W. Watson Cheyne, the President, being in the chair.—A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship, stating that at the recent examination 27 candidates were examined, and that of these 11 were approved and 16 rejected.—The question was raised as to the desirability of discontinuing for the present the examinations in anatomy and physiology for the Fellowship, but the Council decided to make no change.—A report was read from the Court of Examiners, stating that at the recent final examination for the Fellowship 17 candidates presented themselves, and that of these four were found qualified. It was resolved to grant diplomas of Fellowship to the successful candidates.—It was resolved to grant Licences in Dental Surgery to 32 successful candidates.—The President reported that he attended in the theatre of the College at the day and hour appointed for the annual meeting of the Fellows and Members, and that the quorum of 30 was not present, and that after waiting 15 minutes he had declared that the meeting could not be held.—It was resolved by the Council that no further steps should be taken towards holding the meeting, and that no reduction as to the number needed to form a quorum should be made.—The President reported that he had appointed Mr. Norman G. Bennett, a member of the Board of Examiners in Dental Surgery, to give evidence before the Home Office Committee on the use of cocaine by unregistered dentists, and that Mr. Bennett had duly attended before the Committee and had been able to supply the Committee with information of importance.—In accordance with a report of the subcommittee on elections to the Council, it was resolved to take steps to alter the by-laws so as to allow three months to elapse between the nominations of candidates and the election to the Council. This is intended to allow Fellows residing in distant parts of the world to take part in the elections of members of Council.—A report was read from Sir Henry Morris on the proceedings of the General Medical Council at their recent session. The best thanks of the Council were given to Sir Henry Morris for his services as the representative of the College.

The following are the names and medical schools of the successful candidates in the Final Examination for the Fellowship:—

Thomas Jacob Cobbe, M.B., B.Ch. Dub., Trinity College, Dublin, and St. Bartholomew's Hospital; William Edward Tanner, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., Guy's Hospital; Harry Bertram Walker, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., London Hospital; and Ambrose Edgar Woodall, M.D., Ch.B. Vict., Manchester University and St. Bartholomew's Hospital.

The diploma of Member was conferred upon Harry Goudge Grant, M.D. Dalhousie, Dalhousie University and University College Hospital, who has now complied with the necessary by-laws for the Membership.

Licences in Dental Surgery were also conferred by the Council upon the following 32 candidates (including two ladies) who have passed the requisite examinations and have complied with the by-laws:—

Harold John Allen, Middlesex and National Dental Hospitals; Alfred Herbert Bowes, Guy's Hospital; Rossiter Hodgson Bywaters and William Sutton Campbell, Middlesex and Royal Dental Hospitals; William Ashley Cooper and Richard Lawton Cowley, Guy's Hospital; Robert Peter Dewar, London Hospital; Lionel Harold Dixon and Philip Green, Guy's Hospital; Ernest Alphonse Hardy, Charing Cross and Royal Dental Hospitals; Rosa Edwards Harse, London School of Medicine for Women and National Dental Hospital; Herbert Hart, Bristol University; Charles Frederick Hawkins, Guy's Hospital; Gerald Mackenzie Hickley, Westminster and Royal Dental Hospitals; Philip Henry Marsh and William Mercer, Guy's Hospital; John Austen Ogden, D.D.S. Michigan, Michigan and Middlesex Hospital; John Peter, David Maurice Rees, and Leslie George Ridout, Middlesex and Royal Dental Hospitals; Clair William Roberts, D.D.S. Chicago, Chicago and Middlesex Hospital; Valentine Sainty, Middlesex and Royal Dental Hospitals; Frederick Robert Salsbury, Guy's Hospital; Enoch Sanders, Liverpool University; Simon Sanders, Guy's Hospital; Mansfield John Knox Soutter, University College and National Dental Hospitals; Vera Elsie Marie Sturridge, London School of Medicine for Women and National Dental Hospital; Frederick Charles Truman, Birmingham University; and Hampdon Wallis, George William Whelton, Walter Reginald Wotton, and James Alfred Snarey Wright, Guy's Hospital.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An extraordinary Comitia was held on Dec. 10th, Dr. Frederick Taylor, the President, being in the chair. Dr. Joseph Arthur Arkwright, who was elected to be a Fellow on April 27th last, was by a resolution of the College admitted to the Fellowship *in absentia*. A communication was received from Dr. E. Malins, F.R.C.P., of Birmingham, concerning a gift to the College by Mr. F. W. Mitchell. A resolution was passed that the best thanks of the College be given to Mr. Mitchell for his generous donation through Dr. E. Malins of £500 to be devoted to the investigation and treatment of tuberculosis.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton Hall, Westminster, on Dec. 13th, with Sir Francis H. Champneys in the chair. A number of midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

The midwife was not scrupulously clean in every way, as required by Rule E. 2; did not employ antiseptic precautions, and did not comply with the provisions of Rules E. 4 and 8; did not take and record the pulse and temperature of her patients at each visit, as required by Rule E. 14, and did not keep her register of cases as required by Rule E. 24. A child presenting symptoms of illness from birth and suffering from inflammation of and discharge from the eyes, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rules E. 19 and E. 20 (5) of the rules then in force; the child being in the condition aforesaid, she did not hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E. (19) of the rules then in force; and medical aid having been sought for the child, she neglected to notify the local supervising authority thereof, as required by Rule E. 21 (1) of the rules then in force.

ROYAL INSTITUTION.—The Ninety-first Christmas Course of Juvenile Lectures will be delivered by Professor Arthur Keith, F.R.S., at 3 o'clock on Dec. 28th and 30th and Jan. 2nd, 4th, 6th, and 9th, the subject being The Human Machine which all must Work. The lectures before Easter include six by Professor C. S. Sherrington on The Old Brain and the New Brain and their Meaning, and Pain and its Nervous Basis.

THE CHILD-STUDY ASSOCIATION.—In the Jehangier Hall of the University of London, South Kensington, on Wednesday, Jan. 3rd, 1917, Mr. J. C. Maxwell Garnett, Principal of the Municipal School of Technology, Manchester, will lecture on the Vocational Outlook in Education. The chair will be taken at 5.30 P.M. by the Hon. Sir John A. Cockburn, K.C.M.G.

A THREE months' course of lectures and demonstrations in hospital administration will be given at the North-Western Hospital, Hampstead, N.W., by Dr. E. W. Goodall, the medical superintendent of the hospital, on Tuesdays and Fridays, at 5 P.M., beginning Tuesday, Jan. 2nd, 1917. Medical men desiring to attend a course of instruction are required to pay a fee of £3 3*s.* to the clerk, the Metropolitan Asylums Board, Embankment, E.C., giving their full name and address.

KING EDWARD VII.'S HOSPITAL, CARDIFF.—An appeal was made in January of this year by Colonel Bruce Vaughan, the vice-chairman of this hospital, to add 150 beds to the accommodation. Should this be done, the hospital will contain between 450 and 460 beds. The appeal has had a good response, for £30,000 towards the £65,000 required have already been subscribed, as well as a sum of £12,000 for endowment. Colonel Vaughan, in June last, made a further appeal for £55,000 for a nurses' home and maternity and child-welfare hospital, and £50,000 have been subscribed for this purpose by Sir Edward Nicholl, R.N.R., so that towards the total appealed for—viz., £120,000 for capital expenditure—£80,000 have already been found, leaving £40,000 still to be raised. Sir Edward Nicholl's gift will

release, when the nurses' home is completed, a large area of the present building now occupied by the nurses' cubicles and recreation-rooms, and will enable the board to use this space for wards and clinical laboratories; indeed, it would be impossible to proceed with the addition of 150 beds without the provision of new beds for nurses. The home will provide accommodation for 160 nurses, with recreation-rooms, baths of the most modern kind, verandahs facing south, and lawn-tennis and croquet grounds. The maternity hospital will accommodate 89 beds for ante-natal and post-natal purposes and 28 beds for the treatment of delicate children up to school age.

ROYAL ALBERT HOSPITAL, DEVONPORT.—The fifty-third annual meeting of the subscribers to this charity was recently held under the presidency of Lord St. Levan. The report showed that for the year ended Sept. 30th, 1916, 557 in-patients had been admitted, 2401 patients had been treated in the casualty department, and 958 ophthalmic cases were attended. The financial statement showed an income of £5092, and an unfavourable balance of £613 against £1691 in the previous year. The house-to-house collection realised £806, and promises of an additional £300 per annum in annual subscriptions. The committee allude to the generous and splendid support of the working classes.

Dr. William Russell has been elected President of the Royal College of Physicians of Edinburgh in succession to Dr. A. H. F. Barbour.

SCHOOLS at Edmonton have been closed owing to an epidemic of measles, more than 500 cases of which have been notified.

THE committee of the London Temperance Hospital has appointed Mr. R. T. Lawlor to be secretary in place of the late Mr. A. W. Bodger.

THE Alton Cripples Hospital and College Committee has received £1000 for the naming of a cot in memory of R. S. Emery, Queen Victoria's Rifles, who was mortally wounded in the trenches on Dec. 5th.

THE vacancy in the office of secretary-superintendent of the Middlesex Hospital created by the sudden death of Mr. F. Clare Melhado, who served the hospital so devotedly for 37 years, has been filled by the appointment of Mr. Walter Kewley, who has been the resident assistant secretary for the past 11 years.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Policy of the New Government.

AN important declaration on the policy of the new Government was made by Mr. LLOYD GEORGE in the House of Commons on Tuesday. As to the German peace overtures, he said that so far the enemy had indicated no terms whatever. The attitude of the Government was that there could be no peace without reparation and security. The Prime Minister indicated that still greater national efforts would be required. He also announced that steps would be taken to draft men from unessential trades into munition work and other work of national importance. Compulsion would be adopted if sufficient volunteers were not obtained by the time the House of Commons reassembled early next year.

HOUSE OF COMMONS.

THURSDAY, DEC. 14TH.

Tribunals and Medical Evidence.

Mr. SNOWDEN asked the Parliamentary Secretary to the Local Government Board whether a military service tribunal, in a case where there was some doubt about the medical evidence of an applicant for exemption, were entitled to submit the case for the consideration of an Army Medical Board.—Mr. HAYES FISHER replied: It is open to a tribunal to suggest that an applicant for exemption should be examined by a medical board, but they have no authority to direct such an examination.

Wounded Soldiers as Insured Persons.

Mr. BARLOW asked the Financial Secretary to the War Office whether in the case of members of trade-unions who were insured persons and were sent to hospital owing to wounds received in the war, half the military pay was deducted, and whether in view of payments made under the Insurance Act both before and since the war treatment in the hospitals for wounded men should be free.—Mr. FORSTER answered: The reply to the first part of the question is in the negative, and the second part, therefore, does not arise.

MONDAY, DEC. 18TH.

Substitutes for Sugar.

Mr. CAUTLEY asked the Parliamentary Secretary to the Food Control Board whether, having regard to the scarcity of cane sugar and the difficulty of the poor in obtaining even a limited quantity of it, and considering that glucose was a variety of sugar which from a physiological point of view was as nutritious and as easily digested as cane sugar, that glucose could be prepared in large quantities and cheaply by the several factories already making it in this country, or their extensions, and that the sole objection to it as a sweetening agent was that it was not sweet enough, but this could easily be overcome by the addition of a suitable quantity of saccharine, he would encourage or undertake the manufacture of glucose and the addition of saccharine thereto as a means of providing for the people a nutritious sugar cheap, and in no respect injurious, and thereby solving the sugar difficulty.—Captain BATHURST replied: As the raw materials from which glucose is made would have to be imported and would occupy more tonnage than an equivalent amount of sugar, there would not appear to be any advantage in offering special encouragement for the manufacture of this article. Moreover, as matters now stand, it is probably of greater importance to adjust more accurately the distribution of sugar than to increase its quantity or the quality of possible substitutes. The possibility and desirability of extending the use of saccharine for flavouring purposes will be considered, but I should point out that saccharine has no food value.

TUESDAY, DEC. 19TH.

Promotion in Army Medical Service.

Answering Mr. LYNCH, Mr. MACPHERSON (Under Secretary for War) said: Promotion in the Army Medical Service as in other branches of the Army is determined by seniority and merit.

WEDNESDAY, DEC. 20TH.

The Late Senior Medical Officer at Frongoch.

In the course of an answer to Mr. DILLON on the Frongoch Camp, at which Irish prisoners are detained, Sir G. CAVE (Home Secretary) said: I deeply regret to say that the senior medical officer at the camp, who had carried out his duties very efficiently and had shown much kindness to the prisoners, was found drowned near Bala on Dec. 14th. I have asked for a full report of the proceedings at the inquest, and at present can only say that, according to a brief report which I have received, the medical officer had been much worried by certain unfounded charges made against him and his staff. A verdict of "Suicide while of unsound mind" was returned.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BOWER, H. E., M.D. Edin., has been appointed Medical Officer of Health for the Runcorn Rural District Council.

BRODRICK, CHARLES CUMBERLAND, L.R.C.P. & S., L.M. Edin., Medical Officer of Health for the Tavistock (Devon) Rural District Council.

HANDLEY, W. SAMPSON, M.D., M.S. Lond., F.R.C.S. Eng., Surgeon to the Middlesex Hospital.

MACKARELL, W. W., M.D. Liverp., Pathologist to the Royal Infirmary, Leicester.

MCGOWAN, THOMAS, Temporary Medical Officer of Bridewell Dispensary District of the Athlone Guardians.

O'CONNOR, BRIDGET, M.B., Assistant Medical Officer of Health in connexion with the Plymouth Maternity and Child Welfare Scheme.

WIGHTWICK, ALFRED, M.B., Ch.B. Vict., Honorary Anæsthetist to the Torbay Hospital, Torquay.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARNET, CLARE HALL SANATORIUM FOR PULMONARY TUBERCULOSIS, South Mimms, near Barnet.—Assistant Medical Superintendent.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with board, &c.

BOLTON UNION, FISHPOOL INSTITUTION, Farnworth, near Bolton.—Resident Assistant Medical Officer. Salary £383 5s. per annum, with rations, &c.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon, unmarried, for six months. Salary £200 per annum and extras, with board, &c.

BRISTOL GENERAL HOSPITAL.—House Surgeon. Salary at rate of £175 per annum, with board, &c.

CARDIFF, KING EDWARD VII.'S HOSPITAL.—Fourth-Year Student Dresser for three months. Salary at rate of 52 guineas per annum, with board, &c.

CARLISLE CITY.—Assistant School Medical Officer (Male or Female). Salary £350 per annum.

CHELSEA HOSPITAL FOR WOMEN, Arthur-street, Chelsea, S.W.—House Surgeon, unmarried. Salary £80 per annum.

COVENTRY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

CROYDON UNION INFIRMARY.—Resident Assistant Medical Superintendent of Union Infirmary and Assistant Medical Officer of Union House and Children's Homes. Salary £250 per annum, with residential allowances.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—Clinical Assistants in Out-patient Departments.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Three House Surgeons (Male or Female) for six months.

MANCHESTER, ANCOATS HOSPITAL.—Two unqualified Residents. Salary £50 per annum, with board, &c.

MELBOURNE, AUSTRALIA.—Director to Walter and Eliza Hall Institute of Research in Pathology and Medicine. Salary £800 per annum.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—Assistant House Surgeon. Salary £150 per annum, with board, &c.; if a Senior Student, salary £100 per annum.

NORDRACH-UPON-MENDIP SANATORIUM, Blagdon, Bristol.—Assistant Medical Officer. Salary £200 per annum, with board, &c.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Female House Surgeon.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £200 per annum, with board, &c.

QUEEN MARY'S HOSPITAL FOR THE EAST-END, Stratford.—House Surgeon.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon and House Physician for six months. Salary £100 per annum, with board, &c. Also Temporary Assistant Physician.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.

SIDMOUTH URBAN DISTRICT COUNCIL.—Medical Officer of Health. Salary £100 per annum.

SUNDERLAND, COUNTY BOROUGH EDUCATION COMMITTEE.—Temporary Female School Medical Officer. Salary £350 per annum.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

WESTMORLAND SANATORIUM, Meathop, Grange-over-Sands.—Second Assistant Medical Officer. Salary £200 to £250 per annum, with board, &c.

WEST RIDING OF YORKSHIRE.—Assistant Medical Officer at the Cardigan Sanatorium, Carr Gate, near Wakefield, and the Middleton-in-Wharfedale Sanatorium, near Ilkley. Salary £400 per annum.

Births, Marriages, and Deaths.

BIRTHS.

COWAN.—On Dec. 16th, at Thetford, Norfolk, the wife of Geoffrey Cowan, M.D., of a son.

DONNELL.—On Dec. 15th, at Segontium-terrace, Carnarvon, "Daisy," wife of Captain J. H. Donnell, R.A.M.C., of Hinckley, Leicestershire, of a son.

HARTRIDGE.—On Dec. 15th, at King's Hill, Hoo, near Rochester, the wife of Lieutenant H. Hartridge, R.N.V.R., M.B., of a daughter.

PRIESTLEY.—On Dec. 16th, the wife of Major H. E. Priestley, C.M.G., R.A.M.C., Blackmoor, Burley, Hants, of a son.

SIMMINS.—On Dec. 11th, at Purley, the wife of Alfred G. Simmins, M.B., Surgeon, R.N., of a son.

MARRIAGES.

MACALPINE—JONES.—On Dec. 7th, at All Souls' Church, Langham-place, London, Captain James B. Macalpine, F.R.C.S., of Manchester, second son of Sir George and Lady Macalpine, to Doris, younger daughter of Mr. and Mrs. Herbert Jones, of Oswestry.

ROE—LLOYD.—On Dec. 7th, at Holy Trinity Church, Brompton-road, Captain Robert Bradley Roe, R.A.M.C., to Elizabeth, daughter of the late Thomas Glynne Lloyd.

STATHAM—SHERWIN.—On Dec. 13th, at St. Mary Abbot's, Kensington, Reginald Samuel Sherard Statham, M.D., Temporary Captain, R.A.M.C., to Annie Maitland, youngest daughter of the late Rupert Sherwin and Mrs. Sherwin, of Worcester.

WHITAKER—HAMILTON.—On Dec. 14th, at Westcliff, Joseph H. Whitaker, M.D., to Marion, widow of L. H. Hamilton, of Southsea.

DEATHS.

BARR.—On Dec. 14th, at Woodside-place, Glasgow, Thomas Barr, M.D.

CAYLEY.—On Dec. 17th, at Queen's-road, Richmond, Surrey, William Cayley, M.D., F.R.C.P., aged 80.

EVE.—On Dec. 15th, Sir Frederic S. Eve, F.R.C.S. Eng., Temporary Lieutenant-Colonel, R.A.M.C., Consulting Surgeon to the Eastern Command and to the London Hospital, aged 63.

EWART.—On Dec. 7th, Charles Ewart, M.D. Brussels, L.R.C.P., M.R.C.S., of 58, Queen's Gate-terrace, S.W. Born at Fulham, Oct. 12th, 1851. Buried at Brompton Cemetery. Much beloved and deeply regretted.

SMITH.—On Dec. 15th, at Wells, Somerset, of pneumonia, William Alexander Lauder Smith, M.B., B.C. Cantab., aged 51.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE REMUNERATION OF MEDICAL MEN NINETY YEARS AGO.

THE remuneration of medical men 90 years ago was a very capricious affair; hospital appointments went by favour, the corporations only guarded the interests of limited classes, and the services of medical officials were hardly recognised. The Society of Apothecaries of London secured considerable power by the Act of 1815, but the Licentiates, though legally protected, did not form an influential class.

Mr. T. B. Rowe, senior overseer to the Poor-law authority at Eastbourne, has sent us a copy of the minutes of the Select Vestry held at the Workhouse, Eastbourne, on Monday, March 20th, 1826, at which meeting the following notice was given:—

> That Mr. John Ranking, Surgeon, has agreed to attend the Poor of this Parish and find them in Surgery, Physic, and Midwifery for the sum of Forty Pounds per annum (small-pox excepted), commencing from the 25th instant.

Epidemics of small-pox, when they occurred, were so devastating, and entailed so much treatment of the cases that were not fatal, that Mr. Ranking's stipulation not to attend such cases by contract was, no doubt, reasonable. We cannot, however, find out if this stipulation was usually made.

From a further minute of the Select Vestry of Eastbourne we learn that—

> At a meeting of that body "held at the Lamb Inn, in the Parish of Eastbourne, on Friday, the 8th day of December, 1826, for the purpose of taking into consideration the propriety of Vaccinating the Poor of this Parish," it was resolved that "Mr. John Ranking, Surgeon, is agreed with to Vaccinate the Poor of this Parish at three shillings per head agreeable to the list of names that shall be furnished to him by the Select Vestry."

It is clear that the Select Vestry saw that prevention was necessary, and the fact may have been brought home to them by the failure to obtain from their parish medical officer a contract for treatment.

A third extract sent by Mr. Rowe is taken from the parish accounts of January, 1828. It runs as follows:—

> Account for Medical attendance, nurses, drugs, rent of cottage, in the case of Elizabeth Robins ill of small-pox, to John Ranking, Surgeon, Eastbourne, £74 10*s.* 3*d.* ..... Laying out the body, double fees, 15*s.*

From this it will be seen that the parish did not escape liability for the treatment of small-pox because their medical officer attended this class of patient in a private capacity. Eastbourne, or East Bourne, in 1826 was quite a small place.

HEALTH OF GRENADA.

A REPORT on the Blue-book of Grenada for 1915, prepared by Mr. H. Ferguson, the Colonial Secretary, is to hand. From this it appears that the estimated population on Dec. 31st last was 71,567. The births during the year numbered 2415. The deaths totalled 1744, and the death-rate for the whole colony was 24·36 per 1000. The records show that dysenteric diseases affected a great mass of the people and that malaria was to some extent epidemic. Of the total deaths, 40 per cent. were due to dysentery and diarrhœa and enteritis, whilst the deaths from malaria numbered 147. The infantile mortality is fairly satisfactory as compared with other tropical countries, but the percentage of deaths between the ages of 1 and 15 years is excessive, the excess being probably due to preventable causes which may disappear with the adoption of measures for improved sanitation.

The operations undertaken by the local branch of the International Health Commission, under the charge of Dr. A. G. Macdonald, for the eradication of hookworm disease have been vigorously carried on. On a population of 19,000 examined, it has been ascertained that hookworm infection exists to an extent of 75 per cent., and from the variety of this population examined it is reasonable to assume that infection to the same extent exists throughout the colony. Infection by intestinal parasites of one kind or another existed in 99 per cent. of about 19,000 examined. 30 per cent. of the people treated during the year have been cured. Realising that no improvement in the health of the people as the result of treatment for hookworm can be expected to be permanent unless the sources of infection are removed, the Government have amended the Public Health Ordinance and Regulations to provide for more effective disposal of human excreta. Pit closets have also been erected at Government schools, and arrangements are being made for public latrines in

villages where the conditions are unsuitable for pit closets at individual houses.

At the Colony Hospital, which contains 140 beds, the number of patients admitted during the year was 1887; 931 were discharged cured and 857 relieved, while 99 died and 123 remained in hospital at the close of the year. 108 major surgical operations were performed. At the Yaws Hospital a large increase in the number of patients took place, due to greater activity of the sanitary inspectors in discovering sufferers from the disease; 663 were treated, as compared with 460 in 1914. Only 20 were treated with salvarsan, sufficient supplies of the drug being unobtainable. At St. Andrew's Hospital 220 patients were treated during the year, and at Carriacou Hospital 252. The Hospital for Consumptives provides 20 beds, and 54 patients were treated, 25 being males and 29 females. There were 27 deaths, most of the cases admitted being in an advanced stage of the disease and offering little hope of cure. At the five Government dispensaries medicines are supplied free of cost to paupers, labourers' children under 10 years of age, labourers over 60 years, police constables, and prisoners. Free medicines are also supplied to all labourers suffering from yaws, syphilis, malaria, or ankylostomiasis. The rainfall during the year at Richmond Hill station was 72·57 inches; the maximum shade temperature was 92·0° F. and the minimum 70·0°.

USEFUL DIARIES FOR 1917.

Bale's Dental Surgeon's Daily Diary and Appointment Book, 1917.—The principal features of this quarto diary and appointment book are the monthly almanac, which appears through a rectangular opening in the centre of the front cover, and the appointment pages, which are arranged to show a week at an opening of two pages, visiting times being indicated at the side of each daily column. In addition to postal and other general information, items of special interest to dentists are given, such as the conditions recommended for adoption by boards of guardians and others in regard to the appointment of dental officers, lists of unions and district schools, with names of dentists appointed, and so forth. Space for cash accounts and memoranda is also provided, as well as lettered pages for making a written index. The price of the book is 5*s.* plain and 6*s.* 6*d.* interleaved with blotting-paper. Messrs. John Bale, Sons, and Danielsson, and Messrs. Claudius Ash are the publishers.

"Welcome" Photographic Exposure Record and Diary, 1917.—The new edition of this useful companion for photographers contains in a small space practically everything that the amateur photographer requires to know. With the aid of the exposure calculator affixed to the back of the cover of the book and of the tables for use in connexion with it the calculation of exposure time becomes a simple affair, while the development of plates of different classes at different temperatures is made equally intelligible. Tank development, copying, enlarging, reducing, treatment of lantern plates, photography at night and by artificial light are other subjects clearly described. The book measures 3½ by 5½ inches and is published at 1*s.* There are separate editions for the northern hemisphere and the tropics and for the southern hemisphere and the United States.

Live-Stock Journal Almanac, 1917.—In addition to the ordinary diary pages, which include a breeders' table, this publication contains much that is of interest to stock-breeders and others. An article on the world's meat-producing stocks in war-time expresses the opinion that the days of raising pedigree stock as a pastime are over, for the work must now be taken up as a serious business. Many reproductions of live-stock portraits are scattered throughout the pages of the almanac, including a reproduction of the painting by Stubbs of the famous thoroughbred "Eclipse."

LONGEVITY AMONG GREAT MEN.

IN reference to the alleged longevity of the Presidents of the United States, to which a correspondent "A.B.C." alluded in our issue of Sept. 2nd, Professor .I Fisher, professor of political economy in Yale University, sends us a copy of an address, entitled "The Mortality of our Public Men," which he delivered before the American Statistical Association in December, 1915, and published in the quarterly number of the Association for March, 1916. His conclusions are exactly opposite to those arrived at by "A.B.C." "My study shows that the longevity of our Presidents, omitting the three still living, is only 82 per cent. of that 'expected' according to the American Experience Table, and the standard of this table is less than that shown by insured lives to-day. Your contributor reckons the longevity of the Presidents from birth. This cannot be claimed to test the longevity of *Presidents*, or the effect of occupying the Presidency on the longevity of a man, since the Presidents were not Presidents from birth, but became Presidents at a certain age in their lives. Their longevity should, therefore, be reckoned from the date of their inauguration in each case. It is upon this basis that I find the longevity of the Presidents to be considerably below that among insured lives of the present time." There are other points of interest in Professor Fisher's study. His position is unquestionably a logical one, although it might involve a complete revision of our commonly accepted conclusions.

ELECTRICITY AS THERAPEUTIC AGENT.

An interesting essay competition is announced by the Dorset Field Club. The "Cecil" medal and prize of £10 will be awarded in May, 1917, for the best paper on "The more recent applications of electricity in the present war, especially in the treatment of diseases and wounds arising therefrom." The competition will be open to any person who is between the ages of 17 and 35 on May 1st, 1917, and who either was born in Dorset or has resided in the county for not less than one year between May 1st, 1915, and May 1st, 1917. A statement giving particulars of qualification should accompany each paper sent in. Papers should be sent in by March 1st, 1917, to Mr. N. M. Richardson, Montevideo, near Weymouth. Further details may be obtained from the Assistant Secretary of the Dorset Field Club (Mr. H. Pouncy, *Dorset County Chronicle* Office, Dorchester).

ETHICAL STANDARDS AND MEDICAL PRACTICE UNDER INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—Seeing some correspondence in reference to the Insurance Act recently, I offer two suggestions—viz.: 1. That the word "panel" as applied to medical practitioners under the Act should go, and the sooner the better. We have surgeons under the Admiralty, the War Office, the Local Government Board, the Home Office, and so on: why not surgeons or doctors to the National Health Insurance Act? 2. The names of medical practitioners engaged in such a service must not be posted up in towns and villages.

I am, Sir, yours faithfully,

Latheron E., Caithness, Dec. 11th, 1916. A. P. WALTERS.

COLLOIDAL IODINE.

Mr. Lewis Stroud, of the Crookes Laboratories, 50, Elgin-crescent, London, W., calls attention to the advantage to be derived by the use of colloidal iodine in preference to sodium iodide in electro-therapy. In collosol iodine, he points out, the work of dissociation is already done, the ions being free, whereas the use of the salt in ionisation entails the consumption of electric energy (and consequently time) in overcoming the affinity between the ions. The constitution and properties of colloidal iodine are being demonstrated by means of the ultra-microscope at the above laboratories, and medical men are invited to acquaint themselves practically with the properties of this interesting preparation.

ENGLISH AND GERMAN MODESTY CONTRASTED.

IN a recent number (Nov. 23rd) of the *Deutsch. med. Wochensch.* the editor comments on a striking difference between the literary style of the Englishman and of his own contributors. While, he says, the Englishman as a token of his robust self-consciousness writes the word "I" with a capital and has a preference for beginning a sentence with it, many German authors, some of them well known, have a positive horror of speaking in the first person, apparently fearing that the word "ich" might be held by their readers as an unpardonable presumption. Instead of the personal pronoun the German writes, "the author has ....." or "writer of these lines has ....." Dr. Schwalbe fails to find this "sensitive-plant like modesty" in the literary style of any other nation, and in a column which he frequently devotes to rebutting evidences of alleged German inhumanity in warfare he claims this literary fault as the one and only proven "German barbarity."

THE London address of the Ladies' Auxiliary Committee of the Y.M.C.A. base camps in France has been changed from 17, Norfolk-street to 74, South Audley-street, London, W.

One of Them.—We will first ascertain if there is any official reason for the new action.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

The following journals, magazines, &c., have been received:—Bulletin et Mémoires de la Société Médicale des Hôpitaux de Paris, Bulletin of the Johns Hopkins Hospital, Modern Hospital, Clinique Ophtalmologique, Maryland Medical Journal, Annals of Tropical Medicine and Parasitology, Aberdeen University Review, British Dental Journal, Journal of Laryngology, Rhinology, and Otology.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

Christmas Lectures:—The Human Machine which All must Work (adapted to a Juvenile Auditory).

THURSDAY.—Prof. A. Keith: Living Engines.
SATURDAY.—Prof. A. Keith: Living Levers.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the first issue in the New Year, the price will be 8*d.* instead of 6*d.* The rates of subscription will remain as revised in October.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Dec. 20th, 1916.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Tem.	Wet Bulb.	Dry Bulb.	Remarks.
Dec. 14	...	36	36	33	34	34	Foggy
,, 15	0·10	39	39	32	34	35	Overcast
,, 16	...	36	35	31	31	32	Foggy
,, 17	...	34	37	28	31	32	Foggy
,, 18	...	39	37	31	32	32	Foggy
,, 19	...	43	39	31	34	35	Cloudy
,, 20	...	61	43	35	36	36	Fine

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

BOOKS, ETC., RECEIVED.

BLACKWOOD, WILLIAM, AND SONS, London and Edinburgh.
The Wards in War-time. By a Red Cross P.M.O. Price 5*s.* net.
Wounded and a Prisoner of War. By a Wounded Officer. Price 5*s.* net.

CHAPMAN AND HALL, London.
Flight of Mariette: Story of the Siege of Antwerp. By Gertrude E. M. Vaughan. Introduction by John Galsworthy. Price 3*s.* 6*d.* net.

CONSTABLE AND CO., London.
At Suvla Bay. By John Hargrave. Price 5*s.* net.

CORNISH BROS., Birmingham.
Catalogue of the Collection of Skulls and Teeth in the Odontological Museum of the University of Birmingham. Compiled by John Humphreys, M.D.S.

HEINEMANN, WILLIAM, London.
Treatment of Infantile Paralysis. By Robert W. Lovett, M.D. Boston. Price 8*s.* 6*d.* net.

MARLBOROUGH, E., AND CO., London.
Sinhalese Self-taught. By Don M. de Z. Wickremasinghe, Hon. M.A. Oxon. Price 2*s.* 6*d.* net.

SIDGWICK AND JACKSON, Adam-street, Adelphi.
The Amazing Philanthropists. By Susanne R. Day. Price 3*s.* 6*d.* net.

UNWIN, T. FISHER, London.
Hospital Days. By Platoon Commander. Price 2*s.* 6*d.* net.

WILEY, JOHN, AND SONS, New York. CHAPMAN AND HALL, London.
Manual of Fire Prevention and Protection for Hospitals. By Otto R. Eichel, M.D. Price 4*s.* 6*d.* net.
Elementary Qualitative Analysis. By Benton Dales, Ph.D., and Oscar L. Barnebey, Ph.D. Price 5*s.* 6*d.* net.

Communications, Letters, &c., have been received from—

A.—Mr. McCrae Aitken, Lond.; Mr. R. J. Albery, Lond.; Mr. F. Aldridge, Lond.; Mr. A. W. H. Ayling, Lond.; Messrs. Allen and Hanburys, Lond.; Messrs. Armour and Co., Lond.; A. V.; *Accrington Observer and Times*, Advt. Manager of; Mr. F. Aldridge, Lond.

B.—British and Foreign Sailors Society, Lond., Asst. Sec. of; Messrs. T. B. Browne, Ltd., Lond.; Mr. G. P. Butcher, Plymouth; Messrs Butterworth & Co., Lond.; Bolton Guardians, Clerk to the; Mr. M. M. Biggar, Lond.; British Red Cross Society, Lond., County Sec. of; Dr. F. P. Bremner, Lond.; Dr. J. W. Ballantyne, Edinburgh; Dr. C. W. Buckley, Buxton; Mr. E. Bougault, Paris; Messrs. S. H. Benson, Lond.; British Medical Association, Lond., Deputy Medical Sec. of; Mr. W. Blair Bell, Liverpool; Mr. A. C. Bill, Lond.; Dr. A. H. F. Barbour, Edinburgh; Bristol Royal Infirmary, Sec. of; Surgeon P. Hamilton Boyden, R.N.; Messrs. W. H. Bailey and Son, Lond.; Barnwood House Hospital, Gloucester, Med. Supt. of; Dr. F. Carden Brodie, Shoreham-by-Sea.

C.—Dr. J. W. Cropper, Lond.; Chadwick Trust, Lond., Sec. of; Clerical, Medical, and General Life Assurance Society, Lond.; Cheadle Royal, Manchester, Sec. of; Messrs. W. F. Cliff and Sons, Eltham; Dr. H. G. P. Castellain, Beeston; Messrs. R. Carruthers and Sons, Inverness; Captain J. R. Collins, R.A.M.C.; Carlisle Education Committee, Clerk to the; Mrs. Chaplin, Angmering; Rev. Dr. Clarke, Crossgates; Chicago School of Sanitary Instruction; Mr. F. R. Cave, Okehampton; Child Study Association, Lond.; Messrs. Cutting and Underwood, Lond.; Messrs. J. & A. Churchill, Lond.; Coventry Education Committee, Sec. of; Messrs. E. Cook and Co., Lond.; Dr. V. A. Chatelain, Goodmayes.

D.—Dr. G. Drage, Lond.; Mr. R. Donald, Lond.; Dr. G. Duffus, Woking; Mrs. Dawson, Oxford; Dr. U. K. Dutt, Cambridge; Dr. V. Dickinson, Lond.; Mr. H. Dickinson, Lond.; Messrs. W. Dawson and Sons, Lond.; Mr

Clifford Dobell, Lond.; Messrs. Down Bros., Lond.

E.—Emergency Voluntary Aid Committee, Lond., Hon. Organising Secretary of; E S. H.; A. R. Elliott Advertising, New York; Mr. D. L. Eadie, Edinburgh; Mr. W. J. Ettles, Lond.; Messrs. Eyre and Spottiswoode, Lond.; Lady Eve, Lond.; Edgar Allen Institute, Sheffield, Gen. Sec.; Dr. W. H. Evans, Cardiff; Mr. W. H. Evans, Lond.; *Every Week and the Associated*, New York, Literary Editor; Messrs. Evans Sons Lescher and Webb, Liverpool; Dr. C. C. Easterbrook, Dumfries.

F.—Capt. G. Pinch, R.A.M.C.; Fellows Medical Manufacturing Co., New York; Capt. H. Fulham-Turner, R.A.M.C.; Dr. W. M. Fletcher, Lond.; Dr. R. F. Fox, Lond.; Dr. H. Fox, Lond.; Messrs. Fannin and Co., Dublin; Mr. J. O. Fletcher.

G.—Dr. C. D. Green, Romford; Capt. H. G. Gibson, R.A.M.C.; General Register Office, Ireland, Dublin; Dr. H. A. Günther, Hampton Wick; Dr. D. Guthrie; Mr. S. C. Ghose, Devonport; *La Gazette Psychiatrique*, Petrograd, Editor of; Mr. J. Galt, Cottingham; Dr. H. M. Galt, Brighton; Dr. L G. Glover, Lond.; Mr. E. B. Garrard, Weston-super-Mare; Lieut.-Col. A. G. P. Gipps, R.A.M.C.

H.—Mr. C. A. Hoeffticke, Lond.; Dr. C. W. Hutt, Brighton; Mrs. Hayes, Ruxley; Messrs. Harvey and Lumsden, Glasgow; Messrs. Halliday, Pearson, and Co. Manchester; Col. P. Hehir, I.M.S.; Major W. E. Home, R.A.M.C.; Mr. H. E. Haynes, Brentwood; Mrs. Hyslop, Settle; Mr. H. Heald, Ormskirk; Col. E. Hurd; Dr. W. M. Harman, Winchester; Dr. J. Haddon, Denholm; Dr. W. S. Hall, Bradford; Messrs. C. J. Hewlett and Son, Lond.; Mr. J. Hutchinson, Lond.; Lieut.-Col. W. Hefferman; Holborn Surgical Instrument Co., Lond.

I.—Hon. Mrs. Ives, Halstead.

J.—Mr. I. Jefferiss, Gillingham; Messrs. Walter Judd, Lond.; Mrs. Jeffreys, Southampton; Lieut.-Col. H. Jones, R.A.M.C.(T.).

K.—Messrs. H. S. King and Co., Lond.; King Edward's Hospital Fund for London, Hon. Secs. of; Dr. J. C. Khambatta, Edinburgh; King Edward VII. Hospital, Cardiff, Sec. of; Mr. W. H. Kesteven, Kingston-on-Thames; K. A. D.

L.—Dr. C. E. Lea, Manchester; Dr. T. M. Legge, Lond.; Messrs. E. and S. Livingstone, Edinburgh; Leeds and West Riding Medico-Chirurgical Society, Sec. of; Lister Institute of Preventive Medicine, Deputy Director of; Liverpool Medical Institution; Dr. A. E. Larking, Buckingham; Mr. C. Lupton, Leeds; Messrs. Lafayette, Lond.; Mr. S. P. Ludbrook, Birmingham; Prof. A. S. Leyton, Leeds; Mr. J. Langston, Lond.; Prof. Leriche, Lyons; Liverpool University, Acct. to the.

M.—Mr. M. E. MacGregor, Lond.; Middlesex Hospital, Lond., Sec. Supt. of; *Medical Aid Times*, Lond., Editor of; Sir William Milligan, Manchester; Messrs. Mather and Crowther, Lond.; Mr. S. C. Mitchell, Dublin; Mr. G. Morrish, Lond.; May's Advertising Agency, Lond.; Maltine Manufacturing Co., Lond.; Major McCarrison, I.M.S.; Dr. R. H. Miller, Lond.; Miss I. Miller, Lond.; Mr. C. MacMahon, Lond.; Metropolitan Hospital Sunday Fund, Lond., Sec. of; Miss I. H. Murphy, Lond.; *Man*, Lond., Editor of; Medical Supply Association, Lond.; Dr. D. McDonald, Oxford; Mr. R. W. Murray, Fazakerley; Mr. J. F. Mackenzie, Edinburgh; Messrs. Mayer and Meltzer, Lond.; Dr. J. H. Moorhead, Smethwick; Dr. P. F. Murphy, Claremorris; Dr. J. McCullough, Toronto.

N.—Mr. W. S. Nockolds, Lond.; National Council for Combating Venereal Diseases, Joint Hon. Secs. of; Newspaper Society, Lond.; North Ormsby Hospital, Middlesbrough, Sec. of; Newcastle-upon-Tyne Corporation, Medical Officer of Health of; Nordrach-upon-Mendip Sanatorium, Blagdon, Sec. of.

P.—Capt. J. Parkinson, R.A.M.C.; Mr. C. B. Penwarden, Altrincham; Pharmaceutical Society of Great Britain, Lond., Sec. of; Messrs. W. Porteous and Co., Glasgow; Messrs. Parke, Davis and Co., Lond.; Dr. R. Purdon, Belfast; Panel Committee for the County of London.

Q.—Queen Mary's Hospital for the East End, Stratford, Sec. of.

R.—Royal Microscopical Society, Lond., President and Council of; Royal Mail Steam Packet Co., Lond., Chairman and Directors of; Rotherham Hospital, Sec. of; Surg. E. Rayner, R.N.; Dr. A. Routh, Lond.; Royal Academy of Medicine in Ireland, Dublin; Royal Society of Arts, Lond.; Royal Institution of Great Britain, Lond.; Lady Roberts, Lond.; Royal Statistical Society, Lond.; Dr. W. Robertson, St. Marks, South Africa; Mr. J. M. Randle, Ruan Minor; Messrs. Romeike and Curtice, Lond.

S.—Dr. J. P. Steele, Florence; Lieut.-Col. G. B. Stanstead; Mr. H. H. Smith, Lond.; Mrs. L. C. Smith, Tunbridge Wells; Sanitary Wood Wool Co., Lond.; Messrs. G. Street and Co., Lond.; Mr. G. F. Smith, Watford; The State Children's Association, Lond., Sec. of; W. B. Saunders Co., Lond.; Sidmouth Urban District Council, Clerk to the; Messrs. Seabrook Bros., Lond.; St. Vincent's Cripples Home, Eastcote, Hon. Sec. of; Sunderland Post Co.; Mr. G. K. Stone, Lond.; St. Mary's Hospital Medical School, Lond., Librarian of; Messrs. W. H. Smith and Son, Lond.; St. Andrews University Library, Librarian of; Sunderland County Borough Education Dept., Sec. of; Dr. E. N. Smith. Buxted.

T.—Dr. W. J. Turrell, Oxford; Dr. J. Tatham, Old Oxtead; Mr. C. W. J. Tennant, Lond.; Mr. P. C. P. Taylor, Biddenden; Mr. H. R. Tasker, Bristol; Dr. E. P. Travers, Lond.; Tropical Diseases Bureau, Acting Librarian of.

U.—University of Liverpool, Registrar, of.

W.—Lieut. G. S. Wilson, R.A.M.C.; Capt. F. S. Walker, R.A.M.C.(T.); Dr. J. A. Wilson, Warrington; Dr. G. Ward, Sevenoaks; West morland Sanatorium, Meathop, Medical Supt. of; West London Hospital Post-Graduate College, Dean of; Mrs. J. W. Wallis, Lond.; Dr. F. Parkes Weber, Lond.; Mr. E. S. Weymouth, Lond.; Mr. A. J. Walton, Lond.; Mr. E. Wheal, Oxford; Mrs. Wholey, Pevensey.

Letters, each with enclosure, are also acknowledged from—

A.—Ardath Tobacco Co., Lond.; Mr. E P. Allum, Northampton; Aymard Patent Milk Sterilizer Co., Ipswich; Dr. J. Atlee, Lond.; Dr. R. H. B. Adamson, Leeds; Dr. J. Aikman, Guernsey; Dr. J. A. Armitage, Hastings; Animal Defence and Anti-Vivisection Society, Lond., Asst. Sec. of.

B.—Dr. R. H. Bellwood, Ipswich; Dr. A. E. Boycott, Radlett; Dr. R. A. Bickersteth, Liverpool; Mr. J. Bowman, Manchester; Dr. J. E. H. Brock, Lond.; Dr. E Bramwell, Edinburgh; Dr. J. L. Bunch, Lond.; British Purchasers of the Sanatogen Co., Lond.; Mr. D. M. Bell, Pelham Manor; Miss L. Bennet, Lond.; Dr. W. C. Bell, Lowestoft; Dr. G. P. Bate, Lond.; Dr. C. R. Box, Lond.; Dr. G. Black, Rotherfield; Messrs. E. P. Baker and Co., Lond.; Miss Benham, Hove; Dr. F. E. Batten, Lond.; Dr. E. D. Bower, Gloucester; Mr. J. Barlow, Glasgow; Miss M. M. Biggar, Lond.; Dr. E. M. Brockbank, Manchester; Mr. P. Benham, Belvedere; Sir J. Bland-Sutton, Lond.; Mr. P. E. Byrne, Clonmel; Dr. J. E. Beggs, Lond.; Messrs. Burroughs Wellcome and Co., Lond.

C.—Mr. R. G. Caster, Northallerton; Miss M. Cowhy, Buttevant; Mr. F. S. Cooper, Lond.; Mr. A. H. Cheatle, Lond.; Dr. E. O. Croft, Leeds; Mrs. Carver, Torquay; Dr. G. Carter, Sheffield; Capt. A. H. Campbell, R.A.M.C.; Mrs. Cole, Wishford; Messrs. Condy and Mitchell, Lond.; Mr. G. W. Collins, Wanstead; Mr. E. T. Collins, Lond.; Sir A. Critchett, Bart., Lond.; Cunard S.S. Co., Liverpool, Manager of; Mr. G. L. Cheatle, C.B., Lond.; Miss Campbell, Greenock; Dr. P. J. Cammidge, Lond.; Cumberland County Council, Carlisle. Clerk to the.

D.—Mr. M. Duggan, Altrincham; Dr. H. Davies, Lond.; Dr. J. H. Davies, Port Talbot; Dr. J. Donald, Liskeard; David Lewis Northern Hospital, Liverpool, Sec. of; Dr. E. Drybrough-Smith, Shebbear, Messrs. A. De St. Dalmas and Co., Leicester; Lieut W. J. Dilling, R.A.M.C.; Mr. E. J. A. Dodd, Leeds; Dr. G. Dundas, Ramsgate; Capt. A. G. Denmark.

E.—Messrs. England and Co., Hull; Dr. H. E. Ellis, Middlesbrough; East Sussex Insurance Committee, Lewes, Clerk to the; Mrs. Ewart, Lond.; E. W. S.

F.—Mr. L. Franklin, Southwick; Messrs. H. Frowde and Hodder and Stoughton, Lond.; Dr. S. G. Felce, Lond.; Dr. A. D. C. Firth, Farnham.

G.—Dr. W. Gilliatt, Lond.; Messrs. Grimwade and Ridley, Lond.; Dr. W. W. Gregory, Beverley; Major J. H. P. Graham, R.A.M.C.; Guest Hospital, Dudley, Sec. of; Galignani Library, Paris; Sir Rickman J. Godlee, Bart., Lond.; Dr. A. Gregor, Falmouth; Mr. D. M. Greig, Dundee; The Rt. Hon. Lord Guthrie, Edinburgh; Dr. A. G. Goodwin, Douglas; Dr. J. G. Gibbon, Mullingar.

H.—Dr. R. C. Holt, Didsbury; Dr. R. Hutchison, Lond.; Messrs. W. Heffer and Sons, Cambridge; Mrs. Hayes, Leigh; H. B. H.; Mr. N. Hutchinson, Lond.; Dr. W. G. Harnett, Barnet; Mr. F. Hargreaves, Manchester; Lieut. J. C. Houston, R.A.M.C.; Mr. C. J. Heath, Lond.; Prof. R. Howden, Newcastle-on-Tyne; Dr. F. A. Hepworth, Sheffield; Lieut.-Col. F. W. H. D. Harris, R.A.M.C.; Dr. A. Hawkyard, Leeds; Dr. H. D. Hoffman, Tatsfield; Dr. E. R Hunt, Colchester; Dr. T. J. Horder, Lond.; Mr. R. M. Hiley, Radyr.

I.—Mrs. R. H. Ince, Malmesbury; Mr. S. T. Irwin, Belfast; Messrs. Ingram and Bell, Toronto; Messrs. Ingledean and Sons, Cardiff.

J.—Mr. W. Johnson, Northallerton; Mr. R. R. James, Lond.; Mr. J. F. Jennings, Lond.

K.—Dr. H. Kenwood, Lond.; Prof. Klein, Chislehurst; K. A. D.; Dr. W. B. Kendall, Gravenhurst.

L.—Mr. H. R. Ley, Boscombe; Mr. M. C. S. Lawrance, Earlestown; Mr. J. E. Lane, Lond.; Dr. C. Lillingston, Peppard; Mr. R. M. Laird, Birkenhead; Mr. C. Lockyer, Lond.; Messrs. H. K. Lewis and Co., Lond.; Dr. W. E. Lee, Lond.; Messrs. G. Lebocq et Cie, Paris; Lieut. A. W. A. Loxton, R.A.M.C.; Dr. R. A. Lyster, Winchester; Dr. F. Lishman, Bexhill-on-Sea; Major H. Lett, R.A.M.C.; Dr. A. P. Luff, Lond.

M.—Mr. M. S. Mayou, Lond.; Messrs. J. Menzies and Co., Edinburgh; Mrs. McIntyre, Lond.; Messrs. May and Baker, Lond.; Messrs. Masson et Cie, Paris; Mr. J. E. R. McDonagh, Lond.; Messrs. Macmillan and Co., Lond.; Monmouth County Asylum, Abergavenny, Sec. of; Dr. W. Mansell-MacCulloch, Bournemouth; Messrs. Morice, Strode, and Son, Lond.; Dr. G. W. F. Macnaughton, Lond.

N.—Mr. F. C. Newman, Lond.; Nottingham, &c., Eye Infirmary, Sec. of; Messrs. Neale and Wilkinson, Lond.; Capt. J. Nicolas, R.A.M.C.; Dr. E. F. W. Nixey, Lond.; Mr. C. A. R. Nitch, Lond.

O.—Surg. H. M. Oddy, R.N.; Sir W. Osler, Bart., Oxford; Outlook Co., New York.

P.—Perth County and City Royal Infirmary, Treas. of; Dr. H. Playfair, Lond.; Dr. J. Phillips, Lond.; Messrs. Parker and Son, Oxford; Col. J. G. Pilcher, I.M.S.; Sir G. H. Philipson, Newcastle-on-Tyne; Mr. S. Pringle, Dublin; Dr. Packman, Rochester.

R.—Messrs. Raimes and Co., York; Royal College of Surgeons of England, Lond., Sec. of; Mr. J. K. Reeves, Lond.; Mrs. Renshaw, Sale; Miss Rattray, Haslemere; Royal National Hospital for Consumption for Ireland, Dublin, Sec. of.

S.—Dr. C. A. Shaw, Halifax, N.S.; Mr. P. L. G. Skipworth, Leixlip; Messr. Solac, Lond.; Swiss Bankverein, Lond., Manager of; Mrs. Sargent, Lond.; St. Martin's Motor Works, Lond.; S. F. R.; Mr. W. B. Simmons, Sidcup; Mr. O. Sunderland, Bexley; Sir S. J. Sharkey, Lond.; Surg. G. J. C. Smyth, R.N.; Dr. W. W. Smith, Lond.; Dr. F. J. Smith, Lond.; Dr. F. E. Stupnicki, Burgdorf; Messrs. Smith and Son, Birmingham; Dr. H. B. Smith, Lond.; Mr. W. H. P. Sheehy, Lond.; Mr. W. Stuart-Low, Lond.; Capt. H. Spong, R.A.M.C.

T.—Mr. H. G. Terry, Bath; Mr. W. Turner, Lond.; Dr. E. J. Toye, Bideford; Mrs. Trotter, Lond.; Dr. S. J. Taylor, Norwich.

V.—Dr. J. Van Schalkwijk, Standerton; Capt. H. F. Vandermin, R.A.M.C.

W.—Dr. J. J. Welply, Bandon; Dr. A. Whitfield, Beaconsfield; Dr. J. H. White, Glasgow; Dr. C. Wall, Lond.; West End Advertising Agency, Lond.; Dr. J. Wiglesworth, Winscombe; Dr. J. W. J. Willcox, Glastonbury; West Riding of Yorkshire County Council, Wakefield, Treas. of; Mr. J. St. T. Walker, Lond.; Mr. R. Whitelaw, Aberdeen; Dr. L. Wainwright, Folkestone; Mr. G. B. M. White, Lond.; Mr. A. Wilson, Lond.; Dr. C. Watson, Edinburgh; Dr. H. B. Weir, Lond.; Mr. S. Wright, Belfast; Mr. C. G. R. Wood, Shrewsbury; Dr. P. W. Williams, Clifton; Dr. J. Watson, Nottingham; Dr. R. L. Woollcombe, Dublin; Dr. R. P. White, Wigan; Mr. S. White, Sheffield; Mr. G. W. Whitworth, Bradford; Mr. S. M. Williams, Lond; West Suss x County Council, Worthing, Medical Officer of Health to the; Mr. F. A. Warner, Lond.

Y.—York City Asylum, Fulford, Clerk to the.